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Joint Panel Report
EUB Decision 2006-128

Albian Sands Energy Inc.

Application to Expand the Oil Sands Mining and Processing Plant Facilities at the Muskeg River Mine

December 17, 2006

Joint Review Panel Established by the Alberta Energy and Utilities Board and the Government of Canada

REPORT OF THE JOINT REVIEW PANEL ESTABLISHED BY THE ALBERTA ENERGY AND UTILITIES BOARD AND THE GOVERNMENT OF CANADA
EUB Decision 2006-128: Albian Sands Energy Inc., Application to Expand the
Oil Sands Mining and Processing Plant Facilities at the Muskeg River Mine

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EXECUTIVE SUMMARY*

Albian Sands Energy Inc. (Albian) filed Application No. 1398411 with the Alberta Energy and Utilities Board (EUB) pursuant to Section 13 of the *Oil Sands Conservation Act* (*OSCA*), for an amendment to Approval No. 8512 to allow an expansion of the existing Muskeg River Mine mining areas and the construction and operation of a bitumen extraction plant. The application also asked for approval in principle of the integration of the Muskeg River Mine with the Shell Jackpine Mine.

The project is located about 70 kilometres (km) north of Fort McMurray and 5 km east of Fort McKay. The expansion project has been designed to increase bitumen production capacity from the existing 23 850 cubic metres per day (m^3/d) to 43 000 m^3/d. In addition, the project execution schedule allows for integration opportunities between the Muskeg River Mine and the Shell Jackpine Mine construction activities. The integration of the two mines will require the installation of hot water, tailings reclaim water, bitumen froth, and emergency tailings transfer pipelines between the two mines. Albian did not file the required pipeline applications for the consideration of the Joint Panel.

In addition to meeting the environmental assessment requirements of the Alberta Government, the project required an environmental assessment under the *Canadian Environmental Assessment Act* (*CEAA*). On January 18, 2006, the Minister of Fisheries and Oceans Canada requested, in accordance with Section 25 of the *CEAA*, that the Minister of Environment for Canada refer the Muskeg River Mine Expansion project to a review panel. On July 14, 2006, Canada and the EUB entered into an agreement to establish a joint environmental assessment panel (the Joint Panel) for the project review. Under the agreement, the Joint Panel was authorized to undertake the review requirements of the *CEAA*, the *Energy Resources Conservation Act* (*ERCA*), and the *OSCA*.

The Joint Panel considered Application No. 1398411 at a public hearing held in Fort McMurray, Alberta, from September 5 to 7, 2006, and in Nisku, Alberta, from September 11 to 14 and September 18, 2006. Participants that provided evidence at the hearing or registered to otherwise participate in the hearing included First Nations, local aboriginal groups, local residents, the Oil Sands Environmental Coalition, the Northern Lights Health Region, the Regional Municipality of Wood Buffalo, the Governments of Alberta and Canada, and other oil sands operators. While participants raised a number of issues for the Joint Panel's consideration, the most critical issues presented centred on the cumulative environmental and socioeconomic impacts of the project related to comprehensive development of Alberta's mineable oil sands.

Having regard for its responsibilities under the *ERCA*, the *CEAA*, and the *OSCA*, the Joint Panel has carefully considered all of the evidence pertaining to the application. The Joint Panel finds that the project is in the public interest for the reasons set out in this report. Under its EUB authority, the Joint Panel is prepared to approve Application No. 1398411, subject to the approval of the Lieutenant Governor in Council of Alberta.

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* This executive summary is provided for the benefit of the reader and does not form part of the report. All persons making use of the executive summary are reminded that the report should be consulted for all purposes relating to the interpretation and application of the Joint Panel's views.

The Joint Panel reviewed the project in accordance with the requirements of the *CEAA* and assessed the environmental effects of the project and their significance, including those caused by accidents and malfunctions, and the cumulative environmental effects that the project could cause when combined with the effects from other works, projects, or activities, taking into account measures to mitigate these effects. The purpose and need for the project, the feasible alternatives, and the need for a follow-up program were also reviewed, as well as the capacity of renewable resources to meet current and future needs.

The Joint Panel concludes that the project is unlikely to result in significant adverse environmental effects, provided the mitigation measures proposed by Albian and the recommendations of the Joint Panel are implemented.

In approving Application No. 1398411, the Joint Panel has set conditions relating to mining operations, resource conservation, tailings management, and the integration of the two mines. In addition, the Joint Panel has also made recommendations to the federal and provincial governments that would aid in the mitigation of the anticipated environmental and socioeconomic effects of the project and would address the need for follow-up measures.

While this project has been considered to be in the public interest, the Joint Panel must emphasize the importance of the governments of Alberta and Canada giving priority attention to critical challenges related to cumulative impacts for a number of key environmental sectors and the acute and growing issues faced by both the Regional Municipality of Wood Buffalo and the Northern Lights Health Region. With each oil sands project, the growing demands and the absence of sustainable long-term solutions must weigh more heavily in the determination of the public interest.

MUSKEG RIVER MINE EXPANSION PROJECT JOINT REVIEW PANEL
Calgary Alberta

ALBIAN SANDS ENERGY INC.
APPLICATION TO EXPAND THE OIL SANDS
MINING AND PROCESSING PLANT
FACILITIES AT THE MUSKEG RIVER MINE
FORT MCMURRAY

Decision 2006-128
Application No. 1398411

1 DECISION AND RECOMMENDATIONS TO CANADA AND ALBERTA

Having regard for its responsibilities under the *Energy Resources Conservation Act* (*ERCA*), the *Canadian Environmental Assessment Act* (*CEAA*), and the *Oil Sands Conservation Act* (*OSCA*), the Canadian Environmental Assessment Agency and Alberta Energy and Utilities Board (EUB/Board) review panel (the Joint Panel) has carefully considered all of the evidence pertaining to Albian Sands Energy Inc.'s (Albian's) application. The Joint Panel finds that Albian's Muskeg River Mine Expansion (MRME) project is in the public interest for the reasons set out in this report. Under its authority as the EUB, the Joint Panel is prepared to approve Application No. 1398411, subject to the approval of the Lieutenant Governor in Council. The Joint Panel also approves in principle the integration of the Muskeg River and Jackpine Mines. The Joint Panel's approval is subject to the conditions listed in Appendix 1. The Joint Panel expects that Albian will adhere to all commitments it made during the consultation process, in the application, and at the hearing to the extent that those commitments do not conflict with the terms of any approval or licence affecting the project or any law, regulation, or similar requirement that Albian is bound to observe.

With regard to its responsibilities under the *CEAA* and its terms of reference, the Joint Panel assessed the environmental effects of the project and their significance, including those caused by accidents and malfunctions, and the cumulative environmental effects that the project could cause when combined with the effects from other works, projects, or activities, taking into account measures to mitigate these effects. The purpose and need for the project, the feasible alternatives, and the need for a follow-up program were also reviewed, as well as the capacity of renewable resources to meet current and future needs. The Joint Panel concludes that the project is not likely to cause significant adverse environmental effects, provided the proposed mitigation measures and the recommendations of the Joint Panel are implemented.

The Joint Panel recommends to Canada that

1) coordinated action be taken at all levels of government to ensure that the Regional Municipality of Wood Buffalo (RMWB) has the ability to service the anticipated level of sustained growth in the region (Section 6.2.5);

2) Environment Canada (EC) and Alberta Environment (AENV) work together to assess the need for a mine fleet emissions technology review and regulation development process (Section 10.1.4);

3) EC work with AENV to require further evaluation of NO_x-NO_2 conversion technology; this would most appropriately be done through a regional oil sands industry committee with AENV and EC participation or alternatively through the Cumulative Environmental Management Association (CEMA) (Section 10.14);

4) the Department of Fisheries and Oceans (DFO), EC, AENV, and other stakeholders give their input to Albian if a requirement for the development and implementation of monitoring programs for sediment and water quantity and quality for waters that may be affected by the project is required by AENV as a condition in any *EPEA* approval that may be issued if additional site-specific monitoring is required (Section 10.2.5);

5) DFO continue discussions with Albian towards establishing an NNLP that meets the objectives of the *Fisheries Act* in terms of fish habitat losses and disturbances and includes proper monitoring to better ensure and confirm the success of the compensation project (Section 10.3.3);

6) EC and DFO collaborate with AENV and other regional stakeholders to consider approaches and establish the parameters required for regional monitoring for cumulative effects on fish habitat in the lower Athabasca River and Muskeg River watersheds (Section 10.3.3);

7) Transport Canada (TC) identify any additional approval conditions necessary to ensure navigational safety and include these conditions in any authorization (Section 10.4.3);

8) EC collaborate with AENV in a review of the cumulative impacts on the Yellow Rail in the oil sands region using appropriate regional nocturnal surveys in areas of potentially suitable habitat within the next two years; the initiative should also determine mitigation options to minimize the impact on the Yellow Rail (Section 11.2.5);

9) DFO assign members with the appropriate science and technical background to assist in moving the CEMA Watershed Integrity Task Group's (WITG's) work plan forward; (Section 12.2.5);

10) DFO, as a member of the WITG, commit to participating actively and consistently in the group (Section 12.2.5); and

11) DFO and EC, as government agencies, place a greater priority on their roles within CEMA (Section 12.3.6).

The Joint Panel recommends to Alberta that

1) coordinated action be taken at all levels of government to ensure that the Regional Municipality of Wood Buffalo (RMWB) has the ability to service the anticipated level of sustained growth in the region (Section 6.2.5);

2) the government continue to work with the Northern Lights Health Region (NLHR) to address the lack of land, infrastructure, and resources that the NLHR is currently faced with in Fort McMurray (Section 6.2.5);

3) the government continue to work with the RMWB to ensure that the supply of land ready for residential development and the necessary planning are in place to meet the existing and expected housing demand, including affordable housing, in the region (Section 6.3.5);

4) AENV require a detailed design of the asphaltene storage facility prior to construction as part of any *Environmental Protection and Enhancement Act* (*EPEA*) approval (Section 8.6.2);

5) AENV work with EC to assess the need for a mine fleet emissions technology review and regulation development process (10.1.4);

6) AENV require further evaluation of NO_x-NO_2 conversion technology, as recommended by Canada; this would most appropriately be done through a regional oil sands industry committee with AENV and EC participation or alternatively through CEMA (Section 10.14);

7) AENV, through the Wood Buffalo Environmental Association (WBEA), determine the percentage of H_2S in TRS for the oil sands region and incorporate this value in all future regional modelling (Section 10.1.4);

8) if additional site-specific monitoring is required, AENV include as a condition in any *EPEA* approval that may be issued a requirement that Albian develop and implement, with input from DFO, EC, AENV, and other stakeholders, monitoring programs for sediment and water quantity and quality for waters that may be affected by the project (Section 10.2.5);

9) AENV enforce the existing timelines for CEMA in developing reach-specific water quality objectives for the lower Athabasca River, with a target of mid-2007 for completion, through the use of a regulatory backstop or applicant responsibility (Section 10.2.5);

10) AENV collaborate with EC, DFO, and other regional stakeholders to consider approaches and establish the parameters required for regional monitoring for cumulative effects on fish habitat in the lower Athabasca River and Muskeg River watersheds (Section 10.3.3);

11) within the next two years AENV, in collaboration with EC, coordinate a review of the cumulative impacts on the Yellow Rail in the oil sands region using appropriate regional nocturnal surveys in areas of potentially suitable habitat; the initiative should also determine mitigation options to minimize the impact on the Yellow Rail (Section 11.2.5);

12) AENV establish requirements within any *EPEA* approval to implement the findings of the Yellow Rail initiative for surveys, determination of effects, and mitigation strategies where appropriate (Section 11.2.5);

13) AENV and Alberta Sustainable Resource Development (SRD) collaborate with the EUB to review mine plans to coordinate their requirements (Section 11.3.3);

14) AENV add burbot to the list of species to be tested for compatibility with endpit lakes (EPL) containing tailings (Section 11.4.5);

15) AENV consider options within any licences resulting from this or subsequent project applications that would allow for accommodation of changes that may result to the In-stream

Flow Needs (IFN) Water Management Framework based on work completed through Phase II (Section 12.1.6);

16) AENV, as a member of the CEMA WITG, commit to participating actively and consistently in the group (Section 12.2.5);

17) AENV assign members with the appropriate science and technical background to assist in moving the CEMA WITG's work plan forward (Section 12.2.5);

18) AENV enforce the 2007 timeline for CEMA to deliver a watershed management plan for the Muskeg River through the use of a regulatory backstop or applicant responsibility (Section 12.2.5);

19) AENV, as a government agency, place a greater priority on its role within CEMA (Section 12.3.6);

20) AENV encourage CEMA members to outline their expectations and required resource allocation for such initiatives to determine whether their goals and timelines are achievable; if fully researched recommendations cannot be delivered within target timelines, CEMA groups need to make interim recommendations on appropriate environmentally precautionary measures that can be used until recommendations from CEMA are completed; failing that, AENV implement an interim policy, framework, or regulatory control as appropriate (Section 12.3.6); and

21) SRD and Alberta Infrastructure and Transportation (AIT) assess and implement location planning for the most appropriate location for an eastside access corridor and provide an update to the EUB when they have reached a conclusion on what is the most appropriate location (Section 13.1.3).

2 INTRODUCTION

2.1 Application

Albian applied pursuant to Section 13 of the *OSCA* for an amendment to EUB Approval No. 8512. The primary purposes of Albian's MRME is to allow Albian to access and develop new mining areas to support 30 years of expanded capacity, add new bitumen extraction facilities, and debottleneck the existing Muskeg River Mine (MRM) facilities. The MRM and the proposed expansion areas are about 70 kilometres (km) north of Fort McMurray in Townships 94 and 95, Ranges 9, 10, and 11, West of the 4th Meridian and 5 km east of Fort McKay. The proposed project includes the planning, construction, and operation of the following major oil sands facilities:

- an expansion of the existing open pit truck and shovel mine,
- a relocatable crushing and conveying system to size and transport oil sands to an ore preparation plant,
- a new rejects handling system,
- additional slurry conditioning lines,

- debottlenecking and addition of a new bitumen extraction processing train using the warm-water-based caustic-free ore conditioning and extraction process,
- an additional froth treatment plant incorporating new paraffinic high-temperature froth treatment (HTFT) technology,
- debottlenecking of the existing froth treatment circuit,
- additional solvent recovery system,
- addition of a new tailings solvent recovery unit (TSRU) and debottlenecking of the existing system,
- modifying the current tailings treatment circuits for additional capacity as part of the debottlenecking activity,
- an additional tailings treatment circuit,
- additional utilities and infrastructure associated with the mine and related facilities,
- a tailings management scheme, and
- reclamation and closure plans for project.

The project proposal also included

- an integrated development and reclamation plan,
- an integrated water management plan,
- waste management plans,
- initial and ongoing consultation with stakeholders on the social, economic, and environmental impacts of the project,
- integration of the MRME and Shell Canada Limited's (Shell's) Jackpine Mine construction schedules to allow for the staged construction of both projects,
- integration of the Shell Jackpine Mine and MRM through a bitumen froth pipeline, an emergency tailings pipeline, a hot water pipeline, and a tailings reclaim water pipeline common to or linking the projects.[1]

Albian proposed construction to begin in 2007, production increases to start in 2008, and full production capability be effective by 2010. It designed the project to increase the MRM's average nominal production capacity from the current 23 850 cubic metres per calendar day (m^3/cd) to 43 000 m^3/cd. Albian said that mining was scheduled to be completed in 2033.

Figure 1 shows the proposed project location and other features of the area.

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[1] The pipelines require separate applications, which have not been submitted to the EUB and which will be considered on their own merits.

2.2 Joint Panel Review Process

DFO and TC are both Responsible Authorities for this project under the *Fisheries Act* and the *Navigable Waters Protection Act* respectively. Prior to DFO and TC fulfilling their responsibilities, an environmental assessment of the project under the *CEAA* was required.

On January 18, 2006, the Honourable Geoff Regan, former Minister of Fisheries and Oceans, recommended to the Minister of the Environment for Canada that the environmental assessment of the project be referred to a review panel, pursuant to Section 25 of the *CEAA*.

On June 14, 2006, the Honourable Rona Ambrose, Minister of the Environment, referred the proposed project to a review panel. On the same date, the Canadian Environmental Assessment Agency announced that it was proposing to establish a review panel with Alberta for the environmental assessment of the project, in accordance with the *Canada-Alberta Agreement on Environmental Assessment Collaboration (2005)*. Following a 21-day public comment period, the Honourable Rona Ambrose, Minister of the Environment, and Neil McCrank, Q.C., Chairman of the EUB, signed an agreement (the Joint Panel Agreement, reproduced in Appendix 2) to establish the Joint Panel.

Under the Joint Panel Agreement, the Joint Panel is charged with fulfilling the review requirements of the *CEAA*, the *ERCA*, and the *OSCA*. Under the *ERCA*, the Joint Panel must determine whether the project is in the public interest. In making this determination, the Joint Panel is required to consider a range of factors, including resource conservation, public safety, and the economic, social, and environmental impacts of the project.

Under *CEAA*, the Joint Panel must

- submit a report to the Minister of the Environment providing the Joint Panel's rationale, conclusions, and recommendations relating to the environmental assessment of the project, including any mitigation measures and follow-up programs;
- assess the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects likely to result from the project in combination with other projects or activities that are existing or planned;
- determine the significance of the environmental effects of the project; in examining whether any potential adverse effects associated with the project are significant, the Joint Panel must consider the magnitude, geographic extent, duration and frequency, degree to which they are reversible or irreversible, and ecological context of those effects; and
- consider whether there are technically and economically feasible measures that would mitigate any significant adverse environmental effects of the project.

This report sets out the Joint Panel's decision, reasons, rationale, conclusions, and recommendations with respect to its review of the project under the *ERCA*, the *CEAA*, and the *OSCA*. This report also includes a discussion of recommended mitigation measures and follow-up programs, as well as a summary of comments received from the hearing participants.

2.3 Hearing

The Joint Panel consisted of J. R. Nichol, P.Eng. (Presiding Member), J. D. Dilay, P.Eng., and L. Cooke. The Joint Panel considered the application at a public hearing held in Fort McMurray, Alberta, during September 5 to 7, and in Nisku, Alberta, during September 11 to 14 and on September 18, 2006.

Those who appeared at the hearing and the abbreviations used in this report are set out in Appendix 3.

UTS Energy Corp., Suncor Energy Limited, Imperial Oil Resources Ltd., Synenco Energy Inc., Birch Mountain Resources Ltd., Syncrude Canada Limited (Syncrude), Canadian Natural Resources Limited (CNRL), and Husky Oil Operations Ltd. registered to participate in the hearing but did not provide evidence, question witnesses, or make final argument.

2.4 Procedural Matter

A Notice of Question of Constitutional Law under Section 12 of the *Administrative Procedures and Jurisdiction Act* was filed in this proceeding by the Clearwater River Paul Cree Band #175 (Clearwater Band) and the Wood Buffalo First Nation Elders Society (WBFNES). The notice included by reference the entire written submission of those parties. In the notice and written submission, the Clearwater Band and the WBFNES each asserted that it had aboriginal rights that required government to consult with them in relation to the proposed project. Each also requested a ruling that it had standing in this proceeding under Subsection 26(2) of the *ERCA* and an order for payment of costs under Section 28 of the *ERCA*. The Joint Panel considered these requests as a preliminary matter and delivered an oral ruling. The text of the ruling appears in Appendix 4.

Following the ruling, the Clearwater Band and the WBFNES advised the Joint Panel that they would not participate further in the hearing. In making its decisions in this proceeding, the Joint Panel did not rely on material or evidence provided by those groups, except in relation to the questions that were the subject of the Joint Panel's ruling.

3 ISSUES

The Joint Panel considers the issues respecting the application to be

- purpose, need, and alternatives to the project, including alternative means of carrying out the project,
- social and economic effects,
- stakeholder and public consultation,
- resources conservation and recovery,
- tailings management,
- environmental effects (air, water, terrestrial),
- reclamation,

- regional initiatives,
- regional development,
- traditional land use and cultural resources,
- historical resources,
- health effects, and
- capacity of renewable resources.

4 PURPOSE, NEED, AND ALTERNATIVES

4.1 Views of Albian

Albian indicated that the proposed project consisted of the expansion of the existing MRM, including processing facilities to support the increase in production, addition of mining areas, external tailings disposal area, utilities, tailings management, reclamation, and closure plans to support a 30-year expanded capacity for the project. Albian said that the proposed project would include an integration of the operations at the existing MRM with the approved Shell Jackpine Mine – Phase 1, in order to streamline and optimize the bitumen production and allow phased construction of both operations. Albian proposed to integrate the projects through construction of pipelines for hot water, tailings reclaim water, bitumen froth, and emergency tailings transport. Integration would allow Albian and Shell to phase the construction of the MRM and Shell Jackpine Mine facilities on both sites, allowing for development of both mines and optimization of the construction schedule and operation of new facilities for both projects.

Albian explained that it was a joint venture of Shell, Chevron Canada Limited, and Western Oil Sands L.P. It stated that these companies were publicly traded and had a responsibility to conduct their business in the best interests of their shareholders in an economically viable way and in accordance with all applicable laws. Albian said that it must provide return on investment and employment, and that it continued to support the communities in which it operated. Albian stated that project approval was needed to further develop its oil sands leases and allow the integration of operations between the existing MRM and phase 1 of Shell's Jackpine Mine. This would enhance the continued development of both projects in an efficient and economic manner, while providing a continued and reliable energy source to markets.

Albian indicated that there were no viable or realistic alternatives to the project, such as in situ extraction. Albian stated that in order to maximize the value of its asset and to obtain a source of bitumen for upgrading, refining, and sale to the public, the expansion of the MRM was the only alternative. The project would ensure the continued development of the leases in an efficient, economic, and sustainable manner, while generating billions of dollars in taxes and royalties to the provincial government, the federal government, and the RMWB over a 30-year period.

4.2 Views of the Interveners

None of the interveners took issue with Albian's views about the need for the project.

4.3 Views of the Joint Panel

The Joint Panel notes that the purpose and need for the project provide the context for the Joint Panel's consideration of alternatives to the project. The Joint Panel accepts Albian's stated need for and purpose of the project, as well as Albian's evaluation of the alternatives to the project. The Joint Panel notes that no parties objected to the purpose and need of the project, although the RMWB and NLHR requested that the issuance of any approval be delayed.

Having considered the potential alternatives to the project, the Joint Panel concludes that it has sufficient information about the need and purpose of the proposed project. The Joint Panel also concludes that there is no alternative to Albian's proposed expansion of the MRM as a means to access the existing resources.

5 ALTERNATIVE MEANS OF CARRYING OUT THE PROJECT

5.1 Views of Albian

Albian stated that it considered alternative means of carrying out the project and the environmental effects of those alternatives. Albian said that it made design choices to recover the resource efficiently with minimal impact on the environment. Albian considered several alternative means of carrying out the project, namely, mine location and sequence, ore mining, preparation and extraction, tailings technologies, compensation of fish habitat, relocation of Highway 63, and disposition of asphaltenes. The evaluation of the different aspects of these specific components and Albian's conclusions for each of them are discussed further in this report.

Albian said that it evaluated the commercial markets for the asphaltenes from the Shell Scotford upgrader. It stated that if commercial markets could not be developed within a certain period of time, Albian would consider other options for disposition of the asphaltenes, such as storage, gasification, and production of power and/or hydrogen for the upgrader.

5.2 Views of the Interveners

None of the interveners provided views about alternative means of carrying out the project.

5.3 Views of the Joint Panel

The Joint Panel concludes that Albian provided sufficient information on alternative technologies, means, and their associated environmental effects. The Joint Panel accepts the development of the MRM as outlined in the application as the preferred sequence for project development. The Joint Panel recognizes that the development of the MRM concurrent with the Jackpine Mine – Phase 1 is an appropriate approach to the recovery of the bitumen resources from these leases. The Joint Panel also considered and accepts the truck and shovel operation along with the relocatable crusher and rotary breakers as the preferred means of carrying out the project.

The Joint Panel's views on the alternative means for tailings technologies, fish habitat compensation, relocation of Highway 63, and asphaltenes transportation are discussed further in this report.

6 SOCIAL AND ECONOMIC EFFECTS

It is expected that large-scale industrial development will bring change to a community. Change is clearly evident in the Wood Buffalo region due to the sustained rate of oil sands development and the rapid population growth that has followed. For a variety of reasons, investment in public infrastructure and services in the Wood Buffalo region has not kept pace with the level of private investment. As a result, certain public infrastructure and services are currently operating at or above the design capacity, creating the potential for significant impacts. Moreover, the public service providers in the region have indicated that their ability to manage the change that is occurring is limited due to financial and timing constraints. The Joint Panel believes that coordinated action needs to be taken by all levels of government to resolve the socioeconomic issues that exist. It also believes that if public infrastructure investments are not made in parallel with continued investment in oil sands development, socioeconomic issues will increasingly become a critical part of the decision-making regarding oil sands applications in the Wood Buffalo region.

6.1 Project Benefits

6.1.1 Views of Albian

Albian submitted that the $4 billion capital investment proposed for the MRME will increase the production capacity of the mine by 75 per cent and extend its operational life from 2022 to 2031. It expected that roughly $3.0 billion in taxes and royalties would accrue to the provincial government and a further $1.5 billion in taxes would be paid to the federal government. It also estimated that the annual taxes it paid to the RMWB would increase by $5.5 million per year.

Albian recognized that while royalties and taxes were a direct benefit to the people of Alberta and the RMWB, funding requirements for programs such as social and physical infrastructure projects, educational initiatives, and health care improvements would serve to offset the benefits generated by the project.

Albian estimated that the project's three-year construction period (2007-2009) would create 5390 person years of employment, with a peak of 2800 construction jobs on site in mid-2008. The operations workforce would create an additional 630 jobs in the Wood Buffalo region.

6.1.2 Views of NLHR

The NLHR acknowledged that many parties would eventually reap significant benefits from the project and continued oil sands development in the region by way of increased taxes, training, and employment opportunities. However, it noted that the NLHR bore the burden of responding to the exponential population growth in the region brought by oil sands development and thus faced serious infrastructure deficiencies, insufficient funding, and staff shortages.

6.1.3 Views of RMWB

The RMWB acknowledged that the project and the development of the oil sands in general would provide important benefits to Alberta and Canada. However, it also stated that the MRME project would contribute cumulatively to negative socioeconomic impacts on the region and that the residents of the municipality were the most adversely affected by continued oil sands development. It submitted that the RMWB required tangible solutions to the infrastructure and services needs in the region.

6.1.4 Views of the Joint Panel

The Joint Panel acknowledges the substantial economic benefits associated with the project. It also notes that while the need for governments to invest in new infrastructure and expanded public services will offset some of the taxes and royalties generated by the project, the net benefits derived from the project will be significant for the region, Alberta, and Canada.

The Joint Panel also acknowledges Albian's efforts to address socioeconomic and business concerns in its agreements with stakeholders. The Joint Panel encourages companies to undertake and support initiatives that will ensure the broadest possible participation of local residents and businesses in the economic opportunities created by the project.

6.2 Public Infrastructure and Services

6.2.1 Views of Albian

Albian predicted that should all planned development proceed, the RMWB would grow about 30 per cent over the next five years and the project would contribute about 5 per cent to that growth. Albian acknowledged that its project would contribute to the strain on housing, infrastructure, and social services in the Wood Buffalo region, and it committed to do what was in its control to mitigate the impacts. Albian also stated that it considered socioeconomic issues, such as land for housing, municipal infrastructure, education, and health care, to be the responsibilities of the various levels of government, and not the responsibility of industry.

Albian submitted that all necessary parties were aware of the pressures being faced in the region and suggested that the recent oil sands hearings had provided a forum for the examination of the infrastructure and funding issues. Albian indicated that it and the provincial government had taken a number of steps that went a long way to address the concerns. Further, it suggested that the Oil Sands Consultation Initiative (OSCI) and the Oil Sands Ministerial Strategy Committee (OSMSC) would ensure an appropriate and timely responses to the regional issues.[2] It pointed out that the OSMSC was directed by the provincial cabinet to develop a coordinated short-term government action plan to address the social, environmental, and economic impacts of oil sands development in local communities.

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[2] The Oil Sands Consultation Initiative (OSCI) followed the release of the *Oil Sands Consultation Group Final Report and Recommendations* report. It established a process to consult on the development of Alberta's oil sands and to provide a report to the Ministers of Sustainable Resource Development, Environment, and Energy by June 2007. The Oil Sands Ministerial Strategy Committee (OSMSC) is an internal government committee that Cabinet has directed to develop a coordinated short-term government action plan to address the social, environmental, and economic impacts of oil sands development in local communities. The Minister of Justice and Attorney General chair the OSMSC. The Chair of OSMSC is expected to be in receipt of a report containing recommendations and an implementation plan by December 31, 2006.

Albian indicated that it believed the best way to deal with growing pains in the region was to invest in the future. It believed that there were solutions to closing the infrastructure funding gap and indicated it was committed to working with the various levels of government on planning initiatives and on funding innovative solutions to resolve the regional issues raised. It stated that it also believed that whatever came out of these discussions should apply to all new oil sands developers.

Albian opposed the recommendation for a delay of its project. It also opposed the RMWB's recommendation that it be required to provide a portion of infrastructure costs directly through an industrial agreement.

6.2.2 Views of NLHR

The NLHR indicated that the health services in the region were in a critical situation due to a lack of funding, staff shortages, and facilities currently operating at or near capacity. It emphasized that the situation was made more serious by the inadequacy of the province's funding formula to provide an appropriate level of funding relative to the demands it was obligated to serve in the region. It stated that past requests to the province for action had "fallen through the cracks" and no other mechanism existed for it to obtain the resources it needed to respond to the projected population growth. It stated that it was seeking an EUB-led, multistakeholder, multidepartmental inquiry to bring together those who had the power to make policy and to fund a multidimensional solution to the problems of housing, employee recruitment and retention, and the overall funding of health services in the region.

The NLHR submitted that the OSCI would not address its concerns, as the OSCI was only to provide a long-term vision for development of the oil sands and would not solve the short- and medium-term planning difficulties the NLHR faced. The NLHR submitted that a potential solution would have to be multidimensional, involve aspects of planning, and occur within the time horizons of the proposed oil sands development projects. The NLHR took a similar position with respect to the OSMSC. The NLHR stated that while it supported the appointment of that committee and was optimistic that the committee would focus on short-term problems, it pointed out that the OSMSC was a consultative process that had been tasked with only making recommendations. The NLHR questioned whether recommendations made by the OSMC would be dealt with in the political arena.

The NLHR submitted that if the Joint Panel were not prepared to convene an inquiry, it must send a message to the funding agencies, decision-makers, and policy-makers about the urgency of the situation and the need for a quick multidimensional response.

6.2.3 Views of RMWB

The RMWB submitted that it had a long history of raising concerns with respect to socioeconomic issues and that it had long hoped there would be solutions to the ever-growing problems facing the region. In the absence of solutions, it believed that it was necessary to raise in this proceeding its concern with respect to the ability of the municipal government to provide the services and the infrastructure needed to accommodate growth. Specifically, it argued that the municipality was falling further behind and could face serious financial difficulties without a formalized plan that involved greater participation by industry and other senior levels of government in planning for and financing growth. The RMWB argued that it would have to increase its borrowing in order to provide the infrastructure in advance of receiving property taxes from the MRME and other proposed oil sands developments. The RMWB suggested that it would not be prudent financial management for the municipality to incur significant amounts of debt in light of the uncertainty that projects may not go ahead as planned.

The RMWB stated that the municipality did not have the resources over the last number of years to be able to do the appropriate planning. It submitted that it needed time, accurate information, and funds in order to plan appropriately and proceed. It also suggested that many of the factors that went into planning, such as assigned financial responsibility, were beyond the municipality's control.

The RMWB indicated it had spent a lot of time and effort working in cooperation with the Regional Infrastructure Working Group (RIWG) to develop and advance the Wood Buffalo Business Case (WBBC). The WBBC outlined, in detail, the pressing regional needs the RMWB was faced with in the short term and the foreseeable future. The RMWB submitted that the WBBC and subsequent updates provided a strong call for a comprehensive response, but received only moral support from industry and the province. The RMWB contended that the evidence demonstrated that there was no tangible response to the recommendations contained in the WBBC. It suggested that there may have been some coincidental responses by government, but there was nothing that could be linked in particular to the business case.

For these reasons, the RMWB requested a delay of the project so that an EUB-led inquiry process could measure the cumulative socioeconomic impact of all oil sands development in the region and bring together stakeholders from industry, senior levels of government, and the municipality in order to formulate an appropriate plan and assign financial responsibility. It argued that the inquiry process provided an appropriate forum where evidence could be brought forward, tested, and used as the basis for an integrated framework for responsible development of the oil sands.

The RMWB also provided its views on the OSMSC and whether this initiative would produce the resolution needed to address the challenges facing the region. While the RWMB applauded the formulation of the committee and its focus on "short-term wins," it argued that the committee simply did not have any policy-making role or the ability to earmark funds for the resolution of issues. The RMWB suggested that it did not know what action would be taken by the committee, and therefore did not have any comfort level that the OSMSC would provide the kind of integrated plan that would contain solutions for the RMWB.

The RMWB stated that it believed solutions were possible, but that all stakeholders needed to work hard at making those solutions work on a planned basis. The RMWB pointed to its Future Forward process that it had initiated to engage the community in a long-term visioning process for the 20- to 25-year horizon. It stated that while the RMWB supported development, the region's infrastructure and services were strained and there was a real need for it to keep pace with oil sands development. The RMWB called for a better mechanism to address cumulative regional social and economic impacts and for better monitoring and verifying of predictions to take place with respect to socioeconomic and health issues.

6.2.4 Views of Alberta

Alberta submitted that the province was aware of the challenges in the region. It also stated that the province had responded with resources and funding and would continue to work with the RMWB and the NLHR to further address these challenges. Alberta indicated that it would work with many partners, including industry, local organizations, and municipal and federal government to address socioeconomic issues.

Alberta submitted that its response to socioeconomic issues cut across the mandates and responsibilities of a number of Government of Alberta departments. It indicated that Alberta had committed more than $730 million in capital funding over the 2006-2009 period for support for health care facilities, school facilities, post-secondary facilities, the provincial highway network (including Highway 63), municipal infrastructure support, government facilities, housing, and equipment. AIT made the most significant dollar commitment, with about $630 million allocated to twin Highway 63 from Fort McMurray south to Highway 55.

Alberta noted that shortly after the release of the 2005 WBBC in March 2005, the province's Standing Policy Committee on Energy and Sustainable Development received a presentation on the WBBC's findings. Alberta stated that 30 Members of the Legislative Assembly toured the region in July 2005 and in the midst of that tour made announcements on key items that had been raised in the 2005 WBBC recommendations. Alberta also emphasized that contained within the announcement was the commitment by the Minister of Energy that these were first steps to address some of the most immediate pressures, and that what was learned would be brought back to the caucus table so that the Government of Alberta could ensure its long-term strategies to support growth in the region.

It stated that the Government of Alberta, following the work of the OSMC, would take further actions. It pointed out that Cabinet had directed the OSMSC to develop a coordinated short-term government action plan to address the social, environmental, and economic impacts of the oil sands. Alberta stated that a coordinator had been appointed to the committee and had commenced work on the action plan. The action plan, once complete, would allow government to identify the needs and gaps in services and infrastructure and propose solutions for implementation in the near future. It was intended that the recommendations and an implementation plan would be provided to the chair of the OSMSC by December 31, 2006.

Alberta pointed out that Alberta Health and Wellness (AHW) provided funding to the NLHR based on actual growth in the number of persons registered for health care in the region. It submitted that the NLHR had raised its concerns about the level of funding it received to the very highest levels at AHW. It also argued that the expertise to address the funding issues lay within the NLHR and AHW and that these issues would be best resolved through continuing dialogue between the NLHR and AHW.

6.2.5 Views of the Joint Panel

The Joint Panel acknowledges that investment in public infrastructure and services in the Wood Buffalo region has not kept pace with the sustained level of private investment in oil sands development. It heard evidence that much of the existing infrastructure, which has facilitated the expansion of the oil sands industry to this point, is currently operating at or over capacity. With growth pressures expected to continue, public sector service providers in the region, particularly the NLHR and RMWB, have stated that the region will not be able to provide the needed services to support the anticipated pace of growth without substantial additional support from the Government of Alberta.. The Joint Panel recognizes that the NLHR and RMWB did not take their decision to intervene in this proceeding lightly, and it notes that their participation and requested disposition clearly speak to the seriousness of the situation they face.

Considerable evidence on the adequacy of existing funding mechanisms was provided to the Joint Panel. The Joint Panel does not take a position on the adequacy of the funding mechanisms in place. Rather, it believes that the parties directly involved are best suited to have the needed discussions and negotiations related to funding. The Joint Panel takes a similar position with respect to requested conditions that would require industry to contribute toward the cost of new or expanded public infrastructure and services. It believes that the determination of an appropriate funding mechanism rests with government working with the RMWB, NLHR, and industry.

The Joint Panel acknowledges the evidence provided by Alberta that the provincial government has made capital commitments totalling over $730 million in support of the Wood Buffalo region. However, the Joint Panel also agrees with Albian and the interveners that more needs to be done. In particular, the Joint Panel believes two issues raised by the interveners require immediate attention. The first is that certain infrastructure (not covered under the existing capital commitments made by the province) has reached or surpassed capacity limits, which both the NLHR and RMWB provided evidence on. The second is the need for a coordinated action plan and for accountabilities within that plan to assure the public that concrete action is being taken.

The Joint Panel believes that taking action to ensure that the necessary infrastructure is in place to accommodate growth will minimize the impact on RMWB residents, further enhance the region as a place for business, workers, and their families to locate, and increase the competitiveness of the region to attract and sustain oil sands investment. The Joint Panel also recognizes that infrastructure investments have long lead times and large up-front costs. It also notes the RMWB's evidence that the cost associated with these investments could be so large relative to the RMWB's financial capability (at least in the short term) that costs, rather than need, could overly influence the investment decision or the timing of implementation. Recognizing the lead time for new or expanded infrastructure and the potential risk to the RMWB associated with prebuilding infrastructure for new forecast populations, the Joint Panel believes that senior levels of government have a role in minimizing and/or assuming some of that risk. Notwithstanding, the Joint Panel is also of the view that infrastructure investment decisions must be based on strong market information and proactive planning.

It is the Joint Panel's view that capacity constraints related to socioeconomic impacts are avoidable with proper planning and response by the appropriate government authorities. It believes that how well a community manages change will ultimately determine the capacity for public services and infrastructure to respond to increasing demands. The Joint Panel believes that a process is needed that provides a coordinated and effective channel through which regional and cumulative socioeconomic impacts can be addressed. The Joint Panel does not believe that the EUB has the mandate to resolve the socioeconomic issues raised in this proceeding; rather, it believes that responsibility rests with the appropriate government bodies (including the Alberta Government, NLHR, and RMWB) that are in a position to provide direct assistance in these matters. With respect to the request for an EUB-led multistakeholder inquiry, the Joint Panel will forward that request to the EUB for consideration by the full Board. However, the Joint Panel will not delay its decision on the MRME project until the full Board has made a decision on the request for an inquiry.

The Joint Panel notes Alberta's evidence that Cabinet directed the OSMSC to develop recommendations and a coordinated short-term government action plan. It also notes Alberta's evidence that the committee should have these deliverables by December 31, 2006. The Joint Panel believes that this is the appropriate course of action. It also believes that the work of this committee fits with a short window of opportunity that remains open to make investments in infrastructure that can make a difference in the near term as well as for many years to come. The Joint Panel believes that public infrastructure investments are possible in parallel with continued oil sands development and therefore does not see merit in delaying the MRME project, as requested by the RMWB.

The Joint Panel believes that the OSMSC also holds promise for better coordination and response within the provincial government. However, the Joint Panel believes that better coordination is needed among all levels of government to further enhance the level of planning, communication, and response on socioeconomic and health issues in the Wood Buffalo region.

As stated in past Joint Panel decision reports, the Joint Panel expects adequate monitoring and verification of predictions to take place with respect to socioeconomic and health issues. This information should be communicated widely, particularly to the residents of Wood Buffalo, to give them confidence that something is being done. The Joint Panel believes that identifying gaps, establishing indicators, and measuring progress are powerful catalysts for strategic thinking and collaborative action on socioeconomic issues. The Joint Panel notes that information contained in the WBBC and the Wood Buffalo Sustainability Indicator Study already goes a long way towards providing this type of communication with the public. Public reporting on socioeconomic issues serves to provide guidance and focus for the responsible authorities and elected officials working to bring about positive change in the region. The Joint Panel notes the Future Forward program initiated by the RMWB could provide an avenue to communicate this type of information to the residents of the RMWB.

The Joint Panel recommends that coordinated action be taken at all levels of government to ensure that the RMWB has the ability to service the anticipated level of sustained growth in the region. The Joint Panel believes that steps have already been taken to respond to a number of the socioeconomic impacts, but it also believes that the RMWB must have the necessary planning in place and the financial strength to implement the capital projects it has determined are necessary to meet the existing and expected service requirements.

The Joint Panel also recommends that the Government of Alberta continue to work with the NLHR to address the lack of land, infrastructure, and resources that the NLHR is currently faced with in Fort McMurray.

6.3 Availability of Housing and Affordable Housing

6.3.1 Views of Albian

Albian acknowledged that housing in Fort McMurray was both expensive and in short supply. It submitted that it had proposed a number of mitigation measures to address this impact, including

- operating a construction camp for the duration of the construction period,
- reducing the need for temporary housing by using a fly-in, fly-out approach during construction for engineers, consultants, and others who do not have to be on the site permanently,
- providing accommodation for 200 Albian staff near the MRM site during construction, and
- minimizing the use of Living Out Allowances during construction and eliminating them during operations.

Albian stated that it believed the market, through the introduction of new housing, could stabilize itself. It pointed to Alberta's evidence that land was being released that would result in the development of about 11 800 dwelling units over the next few years. It noted that this new residential development would include housing for low income families and indicated that incomes were higher in Fort McMurray relative to other areas of the province. As a result, there was still a high level of housing affordability in the region.

6.3.2 Views of NLHR

The NLHR indicated that the high cost of living, particularly housing in the RMWB, was a significant deterrent to recruitment and retention of both physicians and other health care workers. The NLHR pointed out that it was required to divert $360 000 from its budget simply to ensure that at least 18 rental units were available for its staff, noting that the NLHR was the only health region in the province forced to use its budgetary resources for such a purpose.

6.3.3 Views of RMWB

The RMWB pointed to Albian's evidence that the project was expected to increase population in the region by 3000 people, which equated to a need for about 1000 dwelling units. This increase, the RMWB submitted, was in addition to a current housing deficit of roughly 2800 dwelling units. It further argued that at the current 9 per cent rate of population growth, the total new dwelling units required would reach 13 789 by 2010 (including the existing shortfall). The RMWB submitted that the need for housing units would continue to outstrip the rate of new housing development even with the recent and planned release of land by the Crown to private developers.

The RMWB submitted that the housing situation in Fort McMurray was further complicated by the inability of the current infrastructure to accommodate the new areas contemplated for residential development. It stated that the current infrastructure was not designed to accommodate the expansion and that new municipal infrastructure would need to be built in order to serve these areas. As well, the RMWB indicated that servicing these potential new urban growth areas would be difficult and costly due to the topography of the lands in and around Fort McMurray. The RMWB estimated that the cost of servicing new urban growth areas would be in the order of $535 million to $680 million due to the topography of the lands in and around Fort McMurray.

The RMWB submitted that the existing and expected ongoing housing shortage created a number of stresses on the community, including difficulty in recruiting and retaining workers and financial hardship for those people who faced increasing housing and rental costs but whose income was not linked to the oil sands industry. The RMWB submitted that Fort McMurray had the distinction of having one of the highest, if not the highest, housing costs in the province. It provided evidence that the cost of housing in Fort McMurray had quadrupled between 1995 and 2005; rental rates were currently about double the rental rates in Edmonton and were cited to be the highest in Canada.

6.3.4 Views of Alberta

Alberta outlined a number of efforts it had made to respond to the need for housing, in particular affordable housing in Fort McMurray, including

- the release of 673 acres in 2006 that were expected to yield 5800 housing units, including 600 affordable housing units,
- a northwest parcel that should yield up to 1800 dwelling units when fully developed, and
- 700 acres that are being readied for release at the south end of Fort McMurray, which should yield an additional 4200 dwelling units.

Alberta stated that in total the new areas would yield over 11 800 dwelling units when fully developed. To facilitate growth beyond this, Alberta stated that Alberta Municipal Affairs was coordinating the efforts of SRD, Alberta Seniors and Community Supports, and Alberta Infrastructure and Transportation to develop a provincial strategy in cooperation with the RMWB to ensure that land release was consistent with the municipality's long-range development plans.

To further address affordable housing, Alberta stated that close to $17 million in funding was approved for 414 affordable housing units in Fort McMurray under the Canada-Alberta Affordable Housing Program.

6.3.5 Views of the Joint Panel

The Joint Panel is encouraged by the steps taken and the commitment made by the Government of Alberta to work in cooperation with the RMWB to address the availability of housing, including affordable housing. However, the Joint Panel notes that new residential areas expected to come on stream may lag behind the projected demand for housing. It also notes that planning requirements, cost of servicing, and land development timelines have the potential to delay when new lands will actually be made available for housing construction. The Joint Panel recommends that the Government of Alberta continue to work with the RMWB to ensure that the supply of land ready for residential development and the necessary planning are in place to meet the existing and expected housing demand, including affordable housing, in the region.

7 STAKEHOLDER AND PUBLIC CONSULTATION

7.1 Consultation

7.1.1 Views of Albian

Albian stated that its consultation program was based on a set of core principles that acknowledged the need for public input, value of long-term relationships with key stakeholders, communication with neighbours and all interested parties, responsiveness, and accountability for its actions.

Albian stated that it had consulted extensively with the regulators and key stakeholders on the predicted social, economic, and environmental effects of the project. It stated that its consultation effort included both individuals and groups that would be directly affected by the project and those that demonstrated an interest in the project, including local communities, First Nations, Métis leaders and organizations, environmental nongovernmental organizations, special interest groups, the RMWB, the NLHR, regulators, government agencies, and industry.

Albian submitted that it had provided information about the project through meetings, workshops, forums, open houses, public documents, information handouts, radio advertisements, news releases, a toll-free telephone line, speaking engagements, and the Shell Web site. Albian indicated that it had provided staff and funding to aid a number of stakeholders in their review and understanding of the project. Albian noted that it had been able to achieve mutually agreeable solutions to some issues with stakeholders. Albian stated that even though outstanding issues remained with certain stakeholders, it would work to devise and undertake mitigation measures to address those concerns within Albian's direct control.

Albian committed to working proactively with stakeholders and other developers where possible to bring forward solutions and facilitate action on issues outside of its direct control. Albian stated that it had been working proactively with local and provincial governments and other oil sands developers to understand and find solutions to impacts of a cumulative nature from oil sands developments. These included employment, housing, education, health and emergency services, social services, and transportation infrastructure. Albian committed to providing information on future development plans to the RMWB to assist in regional planning. Albian also emphasized its commitment to carry on its participation in the RIWG executive and its working groups. Albian also pointed to the fact that it had established separate agreements with the Athabasca Chipewyan First Nation (ACFN), the Mikisew Cree First Nation (MCFN), the Fort McKay First Nation (FMFN), the Oil Sands Environmental Coalition (OSEC), and the Métis Locals of the Wood Buffalo Region.

7.1.2 Views of ACFN

ACFN stated that it had been working with Albian to develop a socioeconomic and environmental mitigation agreement, but had not finalized the agreement. In closing argument, ACFN acknowledged the positive efforts of Albian in engaging it in ongoing consultation.

7.1.3 Views of OSEC

OSEC indicated that it had begun its review of the MRME environmental impact assessment (EIA) in 2005. OSEC stated that due to its many commitments, OSEC was not able to engage Albian in discussions until January 2006 and that it had reached an agreement with Albian on August 21, 2006.

7.1.4 Views of MCFN

MCFN thanked Albian for its efforts to understand and its attempts to alleviate the MCFN's concerns. MCFN also applauded Albian on the level of transparency with which it appeared ready to operate. MCFN stated that the agreement that it had reached with Albian had resulted in a reduced intervention on its part and provided a cooperative framework that would enable MCFN to review and provide input into the design and implementation of monitoring programs and the establishment of benchmarks. MCFN also stated that it would have the opportunity to take part in and assess the results from these monitoring programs and would be able to provide input on necessary changes.

7.1.5 Views of the Joint Panel

The Joint Panel believes that, overall, Albian has done an exemplary job of public consultation, involving both those potentially affected and those expressing an interest in the project. The Joint Panel recognizes the proactive approach to participant involvement taken by Albian early in the project development process. Albian has demonstrated that where possible, concerns raised by interested parties have been addressed in the development of the project and in the planned mitigation and monitoring. The Joint Panel also acknowledges the support Albian has provided to regional issues management groups, such as CEMA, Wood Buffalo Environmental Association (WBEA), the Regional Aquatics Monitoring Program (RAMP), and RIWG.

7.2 Agreements

7.2.1 ACFN and Albian Agreement

Albian indicated in the hearing that it had reached a socioeconomic and environmental mitigation agreement with ACFN, which the parties were in the process of finalizing.

7.2.2 OSEC and Albian Agreement

OSEC stated that it took no position on the disposition of the application. OSEC stated that it had an agreement with Albian that addressed priority issues, including the greenhouse gas (GHG) management plan, air emissions, habitat offsets, protected areas, biodiversity monitoring, and a wildlife corridor setback from the Athabasca River. OSEC stated that the next stage would be for Albian and OSEC to develop an action plan containing specific work tasks and schedules to be implemented to meet the commitment resolutions. OSEC requested that the EUB formally recognize the agreement in any approval it might issue for the project.

7.2.3 MCFN and Albian Agreement

MCFN stated that it had reached agreement with Albian in an Environmental Action Plan, which would allow a process for MCFN to review and provide input into the design and implementation of monitoring programs and the establishment of environmental benchmarks. MCFN stated that it would also be involved in assessing the results of monitoring programs and would have the opportunity to recommend necessary changes.

MCFN stated that not all of its concerns were mitigated by this agreement. MCFN continued to object to the project based on concerns with respect to cumulative effects of oil sands development on water quantity and quality, the environment, culture, and traditional land uses.

7.2.4 Non-assertion of Rights Agreement Between MCFN and the Province of Alberta

The Province of Alberta and MCFN advised the Joint Panel that they had entered into a Non-assertion of Rights Agreement in which MCFN agreed not to assert its constitutional rights in this proceeding. The Province of Alberta agreed that it would not challenge MCFN's claim of traditional occupation of the project lands in this proceeding. The agreement allows the Province of Alberta and MCFN to raise these issues in other forums.

7.2.5 Views of the Joint Panel

The Joint Panel acknowledges and commends Albian, MCFN, ACFN, FMFN, and OSEC on the success of their efforts to enter into agreements. While these agreements will not form part of the EUB approval, the Joint Panel does expect Albian to meets its commitments and continue its consultation and communication efforts throughout the life of the project.

8 RESOURCES CONSERVATION AND RECOVERY

8.1 Project and Expansion Areas

8.1.1 Views of Albian

Albian stated that the proposed expansion project area includes the currently approved MRM and additional mining areas and overburden disposal areas. The attached map (Figure 1) shows the location of the proposed expansion project area.

Albian stated that the expansion includes integration of the MRM with the recently approved Shell Jackpine Mine. Albian stated that integration of the projects "will allow Albian to maximize the potential synergies between the two projects and increase efficiencies through integrated project management." Albian submitted that integration would assist in managing labour and development costs, resource recovery, and environmental planning. In addition, the integration of the projects' construction schedules would allow for staged construction of both projects. Albian stated that it was seeking approval of the concept of pipelines for bitumen froth, emergency tailings transport, hot water, and tailings reclaim water between the projects.[3]

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[3] The pipelines require separate applications, which will be considered on their own merits.

8.1.2 Views of the Joint Panel

The Joint Panel notes that the expansion application proposes to integrate the Shell Jackpine Mine and MRM projects through construction of pipelines between them. The Joint Panel understands that bitumen froth and tailings reclaim water will routinely be transferred from the Jackpine Mine to the MRM. Furthermore, the Joint Panel understands that hot water will be transferred on a routine basis from the MRM to the Jackpine Mine. In addition, the Joint Panel understands that the tailings transfer line will be operated in emergency situations only. The Joint Panel believes that the planned expansion will provide an opportunity to optimize the economic, orderly, and efficient execution of the two projects through the proposed integration. The Joint Panel accepts Albian's position on the benefits of project integration and believes that integration will add value to both projects. The Joint Panel believes that the concept of linking the MRM and Jackpine Mine projects with process connections will support project integration and optimization. The Joint Panel approves in principle the integration of the two projects subject to the following conditions:

- Beginning in 2007, as part of its annual mine plan submission, Albian shall report on all changes in the mining, tailings, and reclamation management plans as a result of transferring bitumen and water streams.

- One year prior to the first transfer of bitumen froth between the Jackpine Mine and the MRM, Albian shall provide measurement plans to the EUB for review and approval, including process and instrumentation diagrams, metering, sampling methods, and material balancing procedures that will satisfy the requirements of EUB *Interim Directive (ID) 2001-7: Operating Criteria: Resource Recovery Requirements for Oil Sands Mine and Processing Plant Sites*.

- One year prior to commissioning of the emergency tailings transfer line, Albian shall provide measurement plans, including process and instrumentation diagrams, metering, sampling methods, and material balancing procedures, to the EUB for review and approval.

- Albian shall immediately notify the EUB of any emergency situation requiring a transfer of tailings volumes between operations and shall subsequently provide the EUB with a description of the impact the transfer will have on the mining, tailings, and reclamation plans.

- Except in emergency situations, Albian shall not transfer tailings between the projects without prior approval by the EUB.

- Not less than six months prior to field preparation, Albian shall submit to the EUB for review and approval the detailed geotechnical designs for all external overburden disposal areas.

The Joint Panel notes that the above conditions may be modified when Albian is able to confirm that common ownership has been obtained for the two projects and sufficient information has been provided to the EUB to support the operation of the two mines as one fully integrated project.

The Joint Panel acknowledges that the pipeline licence applications required for crossing the Muskeg River and Jackpine Creek were not filed as part of this application. Albian is required to apply for and obtain EUB approval prior to constructing those pipelines.

8.2 Coordination of Mine Plan Across Lease Boundaries

The coordination of mine plans across lease boundaries is required to re-establish environmental values into the closure landscapes. The requirement has been established by Alberta, EUB, and industry agreements that include the Fort McMurray - Athabasca Oil Sands Subregional Integrated Resource Plan (IRP), the Oil Sands Mining End Land Use Committee Recommendation, and the Regional Sustainable Development Strategy (RSDS). To achieve the objectives, AENV, SRD, and the EUB will need to work together to achieve their individual mandates. The mandate for each government agency is as follows.

AENV

AENV has specific regulatory responsibility relative to Albian's project under the *Environmental Protection and Enhancement Act* (*EPEA*). Under *EPEA*, the construction, operation, and reclamation of oil sands mines and processing plants require AENV approval to address environmental effects created by the development. AENV prescribes environmental standards for reclamation for many types of industrial development.

EPEA provides that AENV must consider the written decision of the EUB and may consider any evidence placed before the EUB in relation to its written decision. AENV also has regulatory responsibility relative to the proposed project under the *Water Act*.

SRD

SRD has specific regulatory responsibility relative to Albian's proposal under the *Public Lands Act*. The *Public Lands Act* authorizes specific uses of public land through the issuance of surface dispositions. The *Public Lands Act* authorizes SRD to develop initiatives to assist in resource protection and for the resolution of multiple-use concerns. The *Public Lands Act* dispositions will authorize and regulate the use of public land, Albian's vegetation removal, aggregate management, and conservation and reclamation activities.

SRD would also have the following regulatory, resource management, and planning responsibilities:

- provide advice and direction to Albian on mitigation and other measures that can be taken to support the sustainability of wildlife resources;
- provide advice and direction to Albian on mitigation and other measures to support the sustainability of fish resources and fisheries.

EUB

The EUB has specific regulatory responsibilities under the *OSCA* to

- conserve the oil sand resource;
- ensure the orderly, efficient, and economical development in the public interest of the oil sand resource;
- provide for its appraisal;
- assist government in controlling pollution in the production of bitumen resources; and

- ensure safe and efficient practices in exploration for and the recovery, storing, processing, and transportation of oil sands, discard, crude bitumen, and derivatives of oil sand products.

The EUB has specific regulatory responsibilities under the *ERCA*, in addition to its duties under the *OSCA*, for all energy resources. When conducting a hearing in respect of a proposed energy resource project, the EUB gives consideration to whether the project is in the public interest, having regard to the social and economic effects of the project and the effects of the project on the environment.

8.2.1 Views of Albian

Albian indicated that joint planning discussions were ongoing to identify alternatives to manage the resources along the common boundaries between Syncrude leases and the MRME project. Albian stated that the 1998 cooperation agreement with Syncrude had been updated to cover common issues, including lease boundaries arising from the MRME project. Albian believed that this agreement would facilitate the orderly and effective mining of oil sands from the leases.

Albian indicated that during the last few years, Albian and Syncrude had pursued opportunities for lease area exchanges (swaps) to reduce common boundary mining areas on Albian's Leases 13 and 90 and Syncrude's Leases 12, 30, 34, and 31. Using shared geological information and common boundary areas containing potential ore, a cross boundary area having a total volume to bitumen in place (TV/BIP) of less than 12 was identified as indicating that mineable bitumen resource was present. Albian stated that this analysis identified bitumen resources that were included in the Syncrude Lease 30 swap that eliminated some common mining boundaries between Leases 13, 30, and 90.

Albian stated that the MRME project and the Aurora North Mine had about 14 km of adjoining lease boundary on the north boundary of Lease 13. Albian stated that the joint approaches to the development of the remaining sectors of this boundary would be required before mining.

Albian stated that it had rationalized the potential lease boundary impact along the western and southern boundaries of Leases 13 and 89 with Syncrude and Exxon Mobil, which would potentially eliminate the need for an internal dike to separate lease operations and would minimize ore sterilization.

Albian stated that it had discussions with Syncrude regarding the relocation of the Aurora North road, power line, and pipeline corridors that currently cross the proposed western mine extension. Albian said that Syncrude intended to relocate its road access by constructing a new east–west road from Highway 63, adjacent to the Athabasca River. Syncrude requested that Albian relocate Syncrude's froth and water pipelines to a pipeline corridor running parallel to the relocated portion of Highway 63. Albian stated that the relocation of Syncrude's 240 kilovolt (kV) overhead power lines was also being discussed.

Albian also indicated that it had other discussions with Syncrude regarding a mine access road to Aurora South, along the east–west boundary between Leases 13 and 30. The road would start at the existing MRM access road near the existing services camp and end at the proposed Aurora South plant site. It would also provide access to Shell's Jackpine Mine. Syncrude also required a utility corridor for power lines and water and froth pipelines. Albian believed that enough room existed between the Lease 90 pit and the Lease 90 North pit for road and utility access to Aurora South.

Albian outlined a number of boundary and coordination issues that it had discussed with other companies to ensure that cooperative planning and development occurred. This included a formal communication process established between

- Albian and Alberta Pacific Forest Industries Inc., which held the Forest Management Agreement for the Lease 13 area;
- Albian and Northlands Forest Products, which conducted timber-harvesting operations on the Lease 13; and
- Albian and Birch Mountain Resources Ltd., which had applied to develop and operate the Muskeg Valley limestone quarry adjacent to the northwest corner of the Lease 90 pit development.

Albian stated that it would continue to consult with adjacent developers to ensure that industry was taking a common approach to closure planning and drainage coordination and to ensure that all mine plan changes lent themselves to coordinated closure planning.

8.2.2 Views of Alberta

Alberta noted that mine plans and reclamation plans are linked. It further indicated that with the current and projected number of active leases in the oil sands region, an integrated design of both mining and reclamation plans at the lease boundaries would be appropriate. Alberta agreed that collaboration among Alberta, the EUB, and industry on issues such as structure design requirements, reviews, and approvals was imperative to achieving a reasonable landform design.

Alberta stated that the MRME project would potentially impact, and would be impacted by, the adjacent existing and future Syncrude and other mine operations. Alberta stated that the expansion would require coordination of reclamation and end land use plans. Alberta found that Albian's final drainage plan for the MRME project and portions of its lease relied on Syncrude's final drainage plans.

Alberta believed that coordinating reclamation with adjacent developments was necessary to ensure the continuity and integration of drainage and landform design and to manage runoff water from reclaimed land.

Alberta believed that reclamation should be planned and carried out at the project, adjacent lease, and regional levels to produce seamless and less fragmented reclaimed landscapes.

Alberta also recommended that the EUB require Albian to coordinate drainage and landform design and vegetation patterns across lease boundaries and to demonstrate the success of these coordination efforts. Alberta also indicated that any *EPEA* approval that may be issued for the expansion project may require Albian to:

- prepare an end land use plan that demonstrated integration of drainage and landform design across lease boundaries,

- participate in and work cooperatively with any regional-level end land use working groups, and
- develop preliminary design elevations within a specified period of time.

8.2.3 Views of the Joint Panel

The Joint Panel commends Albian for undertaking discussions with Syncrude and other operators to develop plans for recovering resources along common lease boundaries. The Lease 30 swap with Syncrude is an example of how the Joint Panel expects leaseholders to work cooperatively to maximize the recovery of the resource.

The Joint Panel acknowledges and strongly supports the need for coordinated mine and reclamation planning across the mineable oil sands. The Joint Panel recognizes that lack of coordination of mine plans across lease boundaries could result not only in ore sterilization but also piecemeal and potentially less effective reclamation among development projects and particularly along common lease boundaries. The Joint Panel believes that fully coordinated mine, reclamation, and end use planning is essential to meet the requirements that will ultimately be set out in a regional Environmental Management Framework.[4]

The Joint Panel believes that companies must sort out boundary issues and provide integrated mine plans that will maximize resource recovery and eventually lead to proper reclamation coordination. The Joint Panel believes that the coordination must include mine planning, recognizing the timing of mining activities, developing reclamation and closure strategies, and defining ownership and disposition of reserves and stripping material.

The Joint Panel notes that Albian also recognizes the importance of ensuring that mine planning of adjacent leaseholders will facilitate coordinated closure planning.

The Joint Panel expects that adjacent leaseholders should where possible

- establish a common long-term planning basis for both parties along the common boundary,
- identify sensitivities that might affect this common basis, and
- develop a process that can be used to develop and analyze alternatives, and communicate the results of such analysis to industry, regulators, and other stakeholders.

The Joint Panel believes that lease boundary plans must be in place well in advance of mining to allow for a workable mine plan, including tree clearing, placement of ditches, and dewatering of muskeg, location or relocation of infrastructure, and incorporation of material volumes. The Joint Panel believes that submission of mining details and alternatives at least five years prior to commencement of mining at the lease boundary is required. A five-year submission requirement provides time for leaseholders to reach agreements, if appropriate, to provide a joint submission, for mining at the common lease boundaries. The Joint Panel therefore directs Albian to submit to the EUB for its review and approval, five years prior to mining at any lease boundary or final pit wall, a report containing

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[4] The regional Environmental Management Framework is currently being developed by the Sustainable Ecosystems Working Group (SEWG). It is scheduled for completion in 2008 and will be forwarded to the Alberta Government.

- a comprehensive evaluation of the lease boundary geology and reserves,
- geotechnical conditions,
- alternative mining scenarios and impacts,
- associated costs in accordance with Section 3.1 of EUB *ID 2001-7*,
- the final results on agreements reached between Albian and adjacent leaseholders,
- any impacts on landform design and drainage, and
- efforts made by Albian to enhance cross-boundary coordination of mining and closure.

In addition, the Joint Panel directs Albian to provide as part of its annual mine plan reporting an update of its efforts to coordinate mine planning and closure with other operators in terms of landform design, drainage, and material balances.

8.3 No Net Loss Plan: Location and Resource Sterilization

8.3.1 Views of Albian

Albian presented a No Net Loss Plan (NNLP) to compensate for those fish habitat losses associated with the destruction of fish habitat in the Muskeg River watershed. Albian stated that it would construct an off-site lake on an unnamed Athabasca River tributary located south of the Muskeg River and connect the lake to the Athabasca River through a constructed channel. Albian stated that the compensation area would be located on First Nations lands and, therefore, there would be no conflict with resource development. Albian also stated that based on the review of available information, there were no mineable oil sands in the proposed compensation lake area. Albian also indicated that the NNLP was in the process of being discussed with FMFN and it was doing a cost-benefit analysis with regard to the location of the compensation lake. Albian said that it had not heard any concerns regarding the compensation lake from FMFN or any other stakeholder. Albian noted that an alternative location for the compensation lake would be available directly east of the FMFN lands should agreement not be reached on the currently proposed location.

8.3.2 Views of the Joint Panel

The Joint Panel acknowledges the broad consultation process that Albian has taken to achieve its NNLP. The Joint Panel notes that about 70 per cent of the Albian compensation lake is on First Nations land and about 30 per cent is on Crown land, including oil sands Lease 29, which is held by Syncrude. The Joint Panel also notes that the NNLP is in the process of being discussed with FMFN and other stakeholders and is currently going through a cost-benefit analysis. The Joint Panel believes that some oil sands resources could be sterilized as a result of the location of the lake and possible future mining of the adjacent Syncrude land.

The Joint Panel notes that FMFN, Alberta, and Syncrude did not object to the proposed Albian compensation plan and the lake location. However, the Joint Panel is aware that the proposed compensation lake option selected in the NNLP is at the draft stage only and will require more time and effort before it is finalized.

The Joint Panel expects Albian to advise the EUB of the final results of the agreements and negotiations with the various stakeholders towards allowing the proposed compensation lake to be located on the proposed area. The Joint Panel notes the lack of sufficient bitumen resource information that would definitively identify the impact of the proposed compensation lake location on oil sands resources. The Joint Panel requires Albian to submit to the EUB for approval a final resource evaluation indicating the estimates of resources that could potentially be sterilized by the location of the proposed compensation lake. The evaluation must be provided for approval not later than December 31, 2010. If the evaluation indicates a mineable resource, Albian will be required to either relocate the lake or apply to the EUB for approval to sterilize the resource.

The Joint Panel acknowledges that there are important concerns with respect to aquatic resources. These concerns are addressed in Section 10.3.

8.4 Highway 63 Relocation

8.4.1 Views of Albian

Albian indicated that several road and utility corridors must be located between the Athabasca River bank and the mining pit crest. Albian proposed a new alignment for about 5.5 km of Highway 63 located 700 m west of its existing alignment, starting from the north edge of the Creeburn Lake Provincial Historical Resource Site and extending to the Lease 13 north boundary.

Albian stated that it designed the corridor along the Athabasca River with the west edge of the corridor offset a minimum of 250 m from the east bank of Athabasca River. In addition to the 250 m corridor, a 60 m wide corridor was required to accommodate Highway 63. To the east of the highway corridor, an additional 60 m wide corridor accommodated pipelines to the Aurora North mine, and a 30 m wide corridor accommodated the 240 kV grid connections to Albian's plant site. Albian stated that the mining pit crest was set back an additional 90 m from Highway 63 to provide for mine pit roads, ditches, and power lines.

Albian recognized that both Alberta and Environment Canada have expressed concern about the proposed relocation of Highway 63 toward the Athabasca River. Albian understands their concerns to be related to compromising the integrity of the Athabasca River valley and possibly geotechnical instability. Albian argued that the IRP allows for mine development and facilities within the Athabasca and Clearwater Resource Management Areas (RMA).

Albian stated that there should be a balance between the use of the natural resources and the protection of the river valley ecosystem. Albian noted that the IRP states that Alberta will honour its existing oil sands commitments. Albian noted that Lease 13 was issued in 1956 with legitimate expectations that those resources could be developed. Albian believed that the existing commitment should be honoured.

Albian stated that it had examined the effects of relocating the highway, including the effects of increasing the buffer from the Athabasca River to 250 m from Albian's originally proposed 150 m buffer. Albian stated that a 250 m buffer from the river would strike a balance between resource extraction and the ecological integrity of the river valley. Albian indicated that if

Highway 63 were to be left in its present location, about 10 million m^3 of bitumen would be sterilized, which at $35 per barrel of bitumen would be a loss of $1.4 billion to $2.2 billion. Albian also believed that the proposed road alignment would be geotechnically stable and said that appropriate erosion and sediment control measures would be implemented as needed.

Albian stated that it had also evaluated the potential environmental impacts, the historical resource impacts, and the geotechnical impacts. Albian concluded that the potential effects on wildlife movement caused by a 250 m corridor would be negligible. Albian indicated that its management plans would improve the integrity of the wildlife corridor by reclaiming disturbed areas and adding fencing to create a buffer between the highway and the corridor. Albian committed to keeping the proposed project connected to the regional landscape to allow for repopulation by wildlife. Albian stated that integrated wildlife management planning was the responsibility of the Alberta Government.

Albian argued that Alberta did not challenge Albian's environmental evidence and submitted no evidence to contradict Albian's evidence. Albian also stated that it had conducted extensive public consultation with all stakeholders, including the Fort McMurray Environmental Association and that there had been no objections from these stakeholders. Albian stated that Alberta did not challenge Albian's public consultation efforts and had not submitted any public consultation evidence of its own. Albian therefore believed that the only evidence before the Joint Panel was that there would be negligible environmental effects, significant resource sterilization, and a significant cost to both Albian and the public if the highway were left in its current position.

Albian stated in argument for the purposes of the Joint Panel's decision on its MRME application that it believed that a compromise was possible. Albian submitted that the Joint Panel should set the project boundary at the 250 m setback, similar to the case of Canadian Natural Resources Limited's (CNRL's) Horizon project. Albian stated that the Joint Panel could include a condition in the approval that Albian report back to the EUB in six months on the relocation of Highway 63, thereby providing an opportunity for further discussions between Albian and Alberta. These discussions should address resource sterilization.

8.4.2 Views of OSEC

OSEC requested that the Joint Panel approve a wildlife movement corridor along the Athabasca River that would be a minimum of 250 m wide at its narrowest point. OSEC's preference was that there be no relocation of Highway 63. However, OSEC requested in the alternative that the Joint Panel recommend to AIT that the proposed 5.5 km relocation of Highway 63 and the existing utility corridor be done such that the widest possible wildlife corridor be preserved.

OSEC observed that the Athabasca River valley was identified as a nationally significant Environmentally Significant Area (ESA), which warranted special protection and management. OSEC said that the Athabasca River was identified in the IRP as part of the Athabasca-Clearwater RMA, which covered only 10 per cent of the IRP. The IRP identified management direction for protection of the Athabasca River as follows:

> The Athabasca River valley ecosystem and its resources and values will be protected and adverse impacts of the development minimized. Exploration and development of the oil sand resources will be

> considered only if the proponent can demonstrate that a satisfactory level of mitigation of the adverse impacts of development on the resources and values identified can be achieved.

OSEC stated that it was concerned that mine proponents continued to propose disturbances within the Athabasca-Clearwater RMA without demonstrating an appropriate level of mitigation of impacts. OSEC stated that it did not believe that removal of old forests, overburden disposal, and mining within the river valley, associated with the long-term uncertainty of reclamation, met the spirit of the IRP. Under the present mine plan, overburden disposal area (OBDA) 4 would be visible from the Athabasca River and present an unacceptable aesthetic impact on the socially important Athabasca River. OSEC maintained that this impact could be effectively mitigated by providing a more appropriate buffer. OSEC advised that it was concerned that mine development west of Highway 63 (assuming relocation of the highway) would negatively affect movement for many wildlife species.

OSEC noted that Albian proposed specific mitigation plans to enhance the value of habitat within the proposed movement corridor:

- Albian would establish berms or shelter belts of mature transplanted trees and/or the reclamation of disturbed areas.
- Alberta would place a 60 m utility corridor between the highway and the 250 m setback.
- The highway could be re-established on the east side of the highway realignment right-of-way to provide a treed buffer between the highway and the movement corridor and utility corridor.
- Albian would construct a fence between the highway and the wildlife corridor.

OSEC recommended that lands west of the existing Highway 63 corridor not be disturbed.

8.4.3 Views of MCFN

MCFN stated that wildlife recolonization of disturbed landscapes and integrated regional wildlife planning were broad aspects pertaining to wildlife and wildlife habitat and that it required more certainty about repopulation.

MCFN observed that Albian's proposal for wildlife was based on the belief that wildlife would return as habitat returned. MCFN stated that without an integrated regional strategy for wildlife management, wildlife recolonization would be difficult to gauge. MCFN recommended that wildlife recolonization be backstopped by government with population targets based on baseline data.

8.4.4 Views of Canada

Canada stated that the Athabasca River valley in the oil sands region was associated with important wildlife habitat values and that keeping buffers of riparian habitat along the river was an important consideration in maintaining habitat integrity. Canada pointed out that riparian areas harboured unique assemblages of migratory birds, as well as significant plant communities and rare plant species. Riparian areas might be important for maintaining wildlife movement through an otherwise heavily disturbed area. Canada believed that maintaining buffer strips of riparian habitat could help protect waterways from adverse effects resulting from accidents, spills, or other upsets from nearby industrial activity and infrastructure.

Canada indicated that several existing and proposed oil sands mining projects in the region encroached into the Athabasca River valley. Canada was of the view that setbacks should be implemented to maintain the ecological integrity of the Athabasca River valley. Canada noted that a 390 m setback distance was consistent with a recommendation it made in the case of CNRL's Horizon project in EUB *Decision 2004-005* regarding an appropriate setback distance from the Athabasca River. Canada was of the view that Albian's proposal for relocation of the Highway 63 corridor was undesirable, because it would further reduce the integrity of the Athabasca River valley. Canada stated that it asked Albian to discuss alternative locations for the realignment of Highway 63, but that Albian provided only a brief response. Canada requested that the Joint Panel recommend to Albian that it evaluate alternative plans for the relocation of Highway 63 and associated infrastructure that would maintain a 390 m setback.

8.4.5 Views of Alberta

Alberta stated that the proposed highway relocation area lay primarily within the Athabasca – Clearwater RMA. In this area, the boundary of the Athabasca-Clearwater RMA was defined by Highway 63 and extended west to the Athabasca River. Alberta stated that the Athabasca River valley was one of the most significant natural features in the oil sands region.

Alberta stated that the management intent for this RMA was to protect the natural landscape that encompassed water, wildlife habitat, wildlife refuge, and travel corridors to recolonize reclaimed landscapes of the region. Maintaining the integrity of the river valley ensured protection of complex hydrological patterns and groundwater regimes, ecological and geological features, and aesthetic, recreational, traditional, cultural, and historical values. Alberta indicated that Guideline 4 of the IRP, for access and infrastructure features, stated that resource development facilities and structures should be screened from the river. Alberta stated that the protected area could provide a source for wildlife and vegetation to recolonize reclaimed landscapes in the region.

Alberta stated that its commitment to the people of Alberta was that the development of the oil sands would provide a balance of social, economic, and environmental values. Alberta observed that encroaching into the river valley did not reflect the balanced values it promoted. Alberta believed that the westward relocation of the highway would create a large disturbance that reclamation could not mitigate. Alberta added that in contrast to the permanent effects on the valley associated with the corridor relocation, the impacts to bitumen recovery might not be permanent, since changes to in situ oil sands technology might allow for future extraction.

Alberta opposed Albian's proposed encroachment into the Athabasca River valley and recommended that if the EUB approved the MRME project, the approval should prohibit development west of the current location of Highway 63 extending to the Athabasca River. Alberta also recommended that if Highway 63 were to be relocated, Albian be responsible for all associated costs and mitigating any potential geotechnical instability.

8.4.6 Views of the Joint Panel

The Joint Panel notes that Alberta, Canada, and OSEC opposed Albian's proposal to relocate Highway 63. The concerns noted were that relocation of the highway in the manner proposed by Albian would compromise the integrity of the Athabasca River valley and its resources and could possibly lead to geotechnical instability. The Joint Panel agrees that the Athabasca River valley is a significant natural feature of the oil sands region that provides important values. The Joint Panel is not convinced that Albian has demonstrated that the relocation of the highway would maintain the equivalent post-closure values for the Athabasca River valley for watershed, wildlife, recreation, aesthetic, ecological, or traditional values identified by the IRP and requested by Alberta.

The Joint Panel estimates that about 15.9 million m^3 of oil may be sterilized with the MRME if Albian is not permitted to relocated the highway as proposed. The Joint Panel estimates that the value of the oil sands resource is about $2.2 billion based on a price of $35 per barrel. The Joint Panel believes that the possibility of having to forgo this significant amount of oil sands warrants further investigation.

The Joint Panel believes that further study is needed to assess the balance between the recovery of bitumen resources and the protection of the river valley ecosystem. The Joint Panel expects that Albian will reapply to the EUB at a later date if further study and consultation with Alberta, Canada, and stakeholders indicates that a full or partial relocation of the highway is appropriate. The Joint Panel expects that such an application would provide sufficient information to allow the EUB to fully evaluate the impact on resource conservation associated with the proposal before it.

8.5 Bitumen Recovery and Solvent Loss

8.5.1 Views of Albian

Albian requested approval to debottleneck the existing MRM bitumen extraction facility and to install an additional extraction facility at a separate location.

Debottlenecking the existing facility would increase bitumen production from 23 850 to 28 618 m^3/cd, and the expansion facility would expand production from 28 618 to 43 000 m^3/cd.

The new facility would have no new step-out technologies in the primary extraction plant but would include the new HTFT process. The existing froth treatment plant would continue to use the low-temperature froth treatment process.

Albian indicated that it had difficulty achieving the bitumen recovery level stipulated by *ID 2001-7*. It stated that bitumen recoveries fell short of the required level for 2003 and 2004 but achieved compliance in 2005.

Albian was confident that bitumen recovery would be compliant with *ID 2001-7* in 2006 and future years.

Albian also acknowledged that it had difficulty maintaining solvent losses below the required 4 volumes per 1000 volumes of bitumen produced. It stated that it was implementing a comprehensive suite of modifications that had reduced and would continue to significantly reduce solvent losses. It was confident that the modifications of the existing equipment would cause Albian to be in compliance with the approval condition by year-end 2006.

Albian was confident that the new HTFT process would maintain solvent losses below this target.

8.5.2 Views of the Joint Panel

The Joint Panel believes that Albian's choice of extraction technology, including the new HTFT process, is an acceptable choice, which should be able to achieve ongoing compliance with the requirements of *ID 2001-7* for bitumen recovery and maintain total solvent loss within the required 4 volumes of solvent lost per 1000 volumes of bitumen produced.

Notwithstanding Albian's improved performance respecting attainment of the solvent loss criterion, the Joint Panel believes that continued quarterly reporting is required to ensure that these requirements are met. In order to update Approval No. 8512 to be consistent with the current industry standard pertaining to solvent losses, the MRM approval will be amended to reflect that total solvent losses on a site-wide basis shall not exceed 4 volumes per 1000 volumes of bitumen produced under all operating conditions. The current approval requirement states: "solvent losses to the tailings pond shall not exceed 4 units of solvent per 1000 units of bitumen produced (by volume) expressed on an annual average." Clause 2 (f) of EUB Approval No. 8512 will be amended to state that on an annual average basis, Albian must limit site-wide solvent losses to not more than 4 volumes per 1000 volumes of bitumen production under all operating conditions.

The Joint Panel concludes that the proposed extraction process and solvent losses are unlikely to result in significant adverse environmental effects, provided that the proposed mitigation measures and Joint Panel recommendations are implemented.

8.6 Asphaltene Disposition

8.6.1 Views of Albian

Albian requested approval to receive and store solid asphaltene prills from the Scotford Upgrader at the MRM. It described the storage of the prills at the mine site as a temporary measure that it applied for because there is no other viable alternative presently available.

Albian described Shell's efforts on behalf of the Athabasca Oil Sands Project to market asphaltenes and/or to consume them for electric power and/or hydrogen generation at the Scotford Upgrader in preference to storing asphaltenes at the MRM site.

Albian stated that Shell was unable to arrange markets for asphaltenes prior to start-up of the de-asphalting unit at the Shell Scotford Upgrader because potential customers required large bulk samples for testing. Albian stated that since large bulk sample volumes would not be available until after plant start-up of the de-asphalting unit at the upgrader, storage of the asphaltenes at the MRM was required.

Albian also stated that if the asphaltenes were stored at the mine site, they would be stored in a lined storage facility to enable recovery later.

8.6.2 Views of the Joint Panel

The Joint Panel agrees with Albian that the storage of asphaltenes should be considered only as a last resort in preference to marketing them as a fuel or feedstock for energy or hydrogen production.

The Joint Panel also acknowledges that large volumes of asphaltenes would be required to reach a marketing decision. It is therefore prepared to approve only the temporary storage of asphaltene prills at the MRM from the Shell Scotford Upgrader for the interim period beginning at the completion of construction and start-up of the MRM debottleneck project until December 31, 2012. No additional asphaltenes may be stored on site after this date. The Joint Panel expects Albian to use this time to investigate the options of marketing, gasifying, or continuing storage of the asphaltene prills. Albian may reapply to the EUB for approval to store additional asphaltenes. The Joint Panel reminds Albian that an application should be submitted sufficiently far in advance of December 31, 2012, to allow for its consideration prior to expiry of the existing approval.

Furthermore, the Joint Panel will require Albian to relocate any asphaltenes stored on the MRM site that would prevent access to mineable bitumen reserves in the future and to store asphaltenes on site in such a manner that will not preclude future recovery and use of the asphaltenes.

The Joint Panel recommends to Alberta that AENV require a detailed design of the asphaltene storage facility prior to construction as part of any *EPEA* approval.

The Joint Panel believes that storage of asphaltenes is not likely to result in significant adverse environmental effects provided the recommendations proposed by the Joint Panel are undertaken.

9 TAILINGS MANAGEMENT

9.1 Tailings Management

9.1.1 Views of Albian

Albian stated that the primary objective of its tailings management plan was to place a maximum amount of tailings back into the mined-out pit as soon as possible in order to minimize the size of the external tailings disposal area, create a stable landscape, and advance reclamation of the mined-out pits.

Albian stated that tailings processing facilities would be similar to those at the MRM, which produced three tailings streams: a coarse tailings stream from primary separation vessels, a thickened tailings stream from thickeners, and tailings from a TSRU. Albian noted that there was one external tailings disposal area (ETDA) for all tailings streams. Albian stated that when in-pit tailings space would become available in late 2009, the MRM would produce non-segregated tailings (NST) by mixing the coarse tailings and thickened tailings with gypsum for direct in-pit placement. Albian stated that in-pit placement of NST would reduce the need to store fine tailings in the ETDA. It also stated that the tailings management plan was based on an NST product that had a sand-to-fines ratio (SFR) of 5.91.

Albian stated that the following new facilities would be required:

- a tailings thickener and a tailings pipeline,
- an extension of the EDTA with higher dikes, and
- a tailings solvent recovery unit.

Albian stated that the ETDA extension was required to accommodate the increase in proposed production and that the ETDA would not be closed until at least forty years after the first tailings were deposited into the pond. Albian also stated that near the end of mine life, 71 million m^3 of mature fine tailings (MFT) stored in the ETDA would be transferred to the EPL for final closure.

Albian indicated that it would construct and operate a scale demonstration NST facility in 2007 to build on its earlier extensive tailings research.

Albian stated that it had prepared a comprehensive tailings management plan that demonstrated how the components of coarse sand and fines from the oil sand feed and that any recycled tailings streams, such as pond MFT, would be distributed into the cell, beach, and NST tailings structures on a yearly basis. To summarize this plan, Albian provided a tailings materials distribution in Table 108a-1 of its Supplementary Information Request responses. Albian stated that it would review this plan in detail with the EUB and make any necessary modifications to ensure that the EUB had sufficient information to monitor the performance of Albian's tailings management program.

Albian stated that it had been involved in a number of tailings technology initiatives over the last ten years. These initiatives included the effects of shear on tailings in pipelines, a joint industry study research program with the University of Alberta that examined the effects of amending NST with calcium oxide and carbon dioxide (CO_2), and tailings thickening pilot programs. Albian also stated that it was conducting a significant amount of fundamental research under the Canadian Oil Sands Network for Research and Development (CONRAD). Albian stated that it would continue to participate in regional and international research programs related to tailings properties and was committed to ongoing research on paste pipeline flow, fine tailings rheology, tailings thickening, and TSRU tailings heat recovery. Albian stated that it would continue to provide a leadership role in tailings research initiatives.

Albian stated that any information that was not proprietary would be shared with stakeholders, as required, to keep them abreast of any advances. Albian also noted its ongoing efforts to ensure that concerns of all stakeholders were addressed. Albian indicated that updates on nonproprietary technology advances could be done through CONRAD and various annual reports. Albian acknowledged that improvements could be made to the organization of the available data on tailings research and development, not just for Albian but industry wide.

9.1.2 Views of Canada

Canada stated that the primary goal of consolidated tailings (CT) and/or NST was to reduce MFT inventories and produce a satisfactory reclaimed landscape. It also stated that the development of fully functional CT and/or NST was a critical component for any working oil sands business if timely and effective reclamation programs were to be realized. Canada expressed confidence in Albian's ability to successfully continue with its NST program.

Canada raised concerns regarding Albian's information on NST availability and requested that the EUB require Albian to provide a clearer MFT inventory calculation.

Canada agreed that if MFT inventories were reduced, this would also address the majority of water inventory concerns. Canada stated that in the mid-1990s, CT was chosen by the oil sands industry as the best technology because it was proven at a commercial scale.

Canada also stated that there were alternative technologies that could be used to reduce MFT inventories, but in general they had not been demonstrated at a commercial scale. These alternative technologies included land farming, freeze/thaw processes, mixing with overburden materials, drying, centrifugation, and using flocculants.

9.1.3 Views of MCFN

MCFN expressed concern about the viability of tailings management plans based on NST technology that had not been commercially established. It also expressed concern that the failure of NST technology would result in excess MFT being placed in EPLs. MCFN believed that there was enough uncertainty in Albian's plan that approval of the project should be delayed until the uncertainty was reduced or removed.

MCFN recommended that Albian continue to research and confirm the capability of alternative tailings technology so that Albian had a solid backup plan to that proposed in the application, with the overall goal of returning all tailings underground to establish a foundation for reclamation. MCFN also felt strongly that benchmarks, timelines, and targets for CT or NST needed to be established.

In response to Albian's statement that it was committed to working with MCFN on understanding tailings management and best practices, MCFN stated that it hoped it would have input that would be meaningfully considered and applied where appropriate.

9.1.4 Views of OSEC

OSEC expressed concerns that Albian's tailings management plan did not constitute a major technological improvement. It stated that thickeners and NST would not provide a dramatic improvement in environmental performance and that insufficient resources had been dedicated to research, development, and piloting.

OSEC requested assurances that the potential damage from this process would be managed responsibly.

9.1.5 Views of the Joint Panel

The Joint Panel believes that Albian's proposed tailings management plan in concept is reasonable based on current technology.

The Joint Panel recognizes that Albian's NST process is similar to the Consolidated or Composite Tails process commercially practiced by other operators in the region, but that it does have some distinct differences. The Joint Panel supports the development of the proposed NST demonstration plant to assist Albian to understand and optimize the proposed NST process. The Joint Panel expects Albian to work closely with EUB staff to develop a comprehensive testing program for the demonstration plant and to keep EUB staff apprised of the test run results.

The Joint Panel also believes that Albian's tailings material balance expressed in Table 108a-1 is a reasonable method by which to track tailings performance in relation to the tailings management plan. However, the Joint Panel agrees with Canada that Albian's estimate of 85 per cent NST system operating availability is unrealistic and therefore instructs Albian to work with EUB staff to update the data in Table 108a-1 of the application such that EUB staff can use the data to reliably track Albian's tailings performance over time. The Joint Panel requires Albian to update and resubmit Table 108a-1 of the application for EUB approval no later than September 30, 2007.

The Joint Panel directs Albian to provide to the EUB quarterly updates to Table 108a-1 of the application within one month of the end of each quarter, beginning after start-up of the debottleneck operations.

Based on the evidence provided at the hearing, the Joint Panel is concerned that Albian's NST targets will not be met and that this would adversely impact the timing for the final closure of the tailings ponds. The Joint Panel finds that this concern is not unique to this application or this operator; therefore, the Joint Panel believes that it would be appropriate for the EUB to revisit the tailings criteria initiative, as previously discussed in the 2004 Jackpine Mine decision (*Decision 2004-009*), to not only establish criteria in a timely fashion but to also establish consequences to not meeting these criteria. The Joint Panel recommends that the full Board establish a formal mechanism or taskforce to establish tailings performance criteria and specific enforcement actions on an industry-wide basis.

The Joint Panel recognizes Albian's contribution to developing alternative tailings technologies and processes and encourages Albian to continue testing these and other technologies to identify further ways and means of reducing MFT inventory, accelerating pond reclamation, reducing land disturbance, and reducing water consumption.

The Joint Panel concludes that by implementing the proposed mitigation measures, the project is unlikely to result in significant adverse environmental effects.

10 ENVIRONMENTAL EFFECTS

The Joint Panel is aware of the pace of oil sands development in the Regional Municipality of Wood Buffalo. The Joint Panel is also aware of the potential impacts of expanding industrial developments on the Athabasca River, the regional airshed and watershed, and other cumulative environmental effects in the region. As such, it is the Joint Panel's position that a higher priority needs to be placed on regional cumulative effects, not only from a regional perspective, but also on an individual project basis. While an individual project may not by itself give rise to a significant environmental effect, some responsibility must be shouldered by the individual operators, accepting that any negative effects their projects may have on the environment are cumulative to the region and must be addressed on an individual and regional basis.

10.1 Air Emissions

10.1.1 Views of Albian

Albian stated that its EIA conclusion that there would be no significant adverse effects associated with air quality from its project were not challenged, nor was its evidence contradicted. It noted that with the exception of acrolein, its human health risk assessment indicated negligible acute and chronic effects. It said that predicted fine particulate matter ($PM_{2.5}$) levels would be well within Canada Wide Standards. It said that it had committed to numerous operational design standards to reduce project effects on regional air quality.

Although the project would be a minor, 4 per cent, contributor to oxides of nitrogen (NO_x) emissions, Albian stated that it was committed to

- using low NO_x burners and heater flue gas recirculation to achieve emission levels comparable to ultra-low NO_x technologies,
- bringing low-NO_x mine fleets on line as technology became available from manufacturers, and
- participating in AENV's best available technology economically achievable (BATEA) study for stationary sources.

It said that it would pursue the best available mine vehicles meeting US EPA Tier IV NO_x and PM standards as the technology became available between 2011 and 2015.

Albian noted that its project was a minor contributor to regional acid deposition; however, it said that it designed the project to minimize acidifying emissions and that it would continue to provide leadership to related regional initiatives.

It stated that the project would be a minor contributor to regional volatile organic compound (VOC) emissions and that predicted VOC component ambient air levels would be within Alberta Ambient Air Quality Objectives (AAAQO), with the exception of acrolein. On that matter, Albian said that monitoring indicated that air dispersion models were overpredicting ambient air concentrations. It said that to address uncertainties about its acrolein monitoring method, it would commit to follow-up monitoring in cooperation with other operators and the WBEA. Albian stated that its project would produce low levels of benzene, below the related AAAQO, which were not predicted to increase health risks. Albian also stated that it would not lead but would support the implementation of a continuous benzene monitoring program through the WBEA.

Albian stated that its operation did not produce substantial amounts of sulphur emissions and its research indicated that hydrogen sulphide (H_2S) constituted only a small component of total reduced sulphur (TRS).

Albian stated that it would incorporate the following source and ambient air monitoring as part of its project:

- stack surveys and sampling in accordance with its *EPEA* approval,
- operation of its two continuous and nine passive monitors, which are managed through WBEA,
- its leak detection and repair program (LDAR), consistent with the Council of Canadian Ministers of the Environment (CCME) code of practice for control of fugitive emissions,
- monitoring VOCs through grab sampling at the continuous monitoring sites, and
- fugitive emissions surveys at external trailing disposal and mine face areas.

Albian stated that it was committed to active participation in regional air issues initiatives, including

- CEMA working groups (NOx-SO2 Management Working Group, Trace Metals and Air Contaminants Working Group),
- WBEA air monitoring and air emissions assessments, and
- Terrestrial Environmental Effects Monitoring (TEEM) program, which monitors for air emissions effects on vegetation and soils in the region.

It said that Shell and Albian believed that human activities could affect climate and that those companies were taking action to reduce GHGs. Albian stated that while GHGs were not yet regulated, it had the lowest GHG intensity of all oil sands operators. It indicated that Albian would be directed by Shell's climate change principles, which included proactive participation in addressing climate change issues, voluntary emission reduction targets, and voluntary progress reporting, among others.

Albian objected to Canada's recommendations related to air emissions management, stating that they were not needed to ensure that there would likely be no significant adverse environmental effects from its project. It stated that Canada provided no evidence to support the need for the measures to avoid environmental impacts and noted that imposition of the recommendations would inappropriately disadvantage Albian relative to other oil sands operators. It said that it voluntarily used ultra-low-sulphur diesel fuel and that this should not be a condition of approval, as recommended by Canada, as doing so would penalize voluntary action and discourage future voluntary research and work by Albian and other operators. Albian said that research on mine-fleet retrofit equipment for NO_x and PM control should not be its sole responsibility and that it would be more appropriate to conduct that research through a multistakeholder industry-regulator working group.

10.1.2 Views of Canada

Canada said that it generally did not have concerns with respect to significant health effects related to air quality. It said that it expected project effects on $PM_{2.5}$ to be minimal, although it viewed that end points related to less severe health effects were not evaluated. Canada made recommendations with respect to air emissions and related effects issues.

EC requested that the Joint Panel recommend that the federal and provincial governments

- require proponents to provide an additional set of model predictions using a baseline emission scenario that consists of the existing emissions in the oil sands region, and
- ensure that proponents include developed areas when determining air quality effects and guideline exceedances.

EC recommended that Albian, in cooperation with other oil sands operators,

- undertake analysis to determine whether the Syncrude North Mine data are appropriate to use for the calculation of the ambient air ratio for NO_x conversion to nitrogen dioxide (NO_2),
- undertake a long-term acrolein monitoring program, and
- implement a continuous benzene monitoring program.

EC recommended that to minimize effects of the MRME project on air emissions,

- Albian should actively participate in research into adapting on-road and off-road NO_x and PM emission after-treatment equipment for its existing very large off-road vehicles,
- when the technology becomes available Albian should retrofit a large portion of its existing mining fleet with NO_x and PM emission after-treatment equipment, and
- Albian should use ultra-low-sulphur diesel (15 milligrams per kilogram), which will be widely available in all parts of Canada by October 2006.

EC recommended that the Joint Panel direct federal and provincial governments to manage emissions to avoid exceedances of existing ambient air objectives.

EC recommended that degradation in regional air quality be minimized to the extent possible by requiring the application of best available technology and best management practices to minimize the emissions of VOC, NO_x, sulphur dioxide (SO_2), PM, and reduced sulphur compounds from the MRME and other oil sands projects.

10.1.3 Views of Alberta

Alberta stated that, as recommended by CEMA, it is reviewing BATEA for NO_x stationary NO_x emissions sources. It said that increases in NO_x emissions in the region are substantial and that any *EPEA* approval issued for the project may require Albian to participate in the review and to implement BATEA as determined by the study.

Alberta said that any *EPEA* approval for the project may require Albian to

- implement an LDAR program to control fugitive VOC emissions in accordance with the CCME Code of Practice;
- continuously monitor ambient benzene concentrations to confirm the conservativeness of the modelling approach in estimating the influence of Albian's project on ambient benzene

concentrations (Albian could conduct the monitoring on its own or in collaboration with WBEA);

- monitor VOC emissions from major fugitive sources (Albian could conduct the monitoring on its own or in collaboration with WBEA);
- participate in ongoing regional efforts through CEMA to develop regional management frameworks to address trace air contaminants, such as benzene and acrolein; and
- continue participating in regional acid deposition and eutrophication monitoring efforts.

On the issues of the amount of H_2S in TRS, AENV stated that in most places in Alberta, H_2S made up the largest percentage of TRS, up to 99 per cent in some cases.

Alberta stated that it had consulted with stakeholders on a GHG regulatory framework. However, until sector-wide regulations were in place, AENV intended to put emission intensity targets in approvals for large oil sands projects. It said that AENV would work with Albian to establish an appropriate GHG intensity target for the expansion project.

Alberta stated that AHW viewed Albian's conclusions as reasonable and that human health impacts for the application case were negligible, including negligible to low for acrolein. In addition, Alberta stated that AHW would continue to observe and evaluate regional monitoring data to ensure that unacceptable human health risks were avoided.

10.1.4 Views of the Joint Panel

The Joint Panel believes that air emissions from the proposed mine expansion project are relatively small in the regional context and likely will not pose unacceptable environmental and public health risks. The Joint Panel expects Albian to follow through on its commitments to

- use low-NO_x burners with heater flue gas recirculation,
- bring low-NO_x mine equipment on line as soon as technology is commercially available,
- participate in AENV's NO_x BATEA study and, subject to the findings, implement its recommendations,
- implement and sustain a LDAR program consistent with CCME Code of Practice, and
- actively participate in CEMA air issues working groups, TEEM, and WBEA.

The Joint Panel notes Canada's recommendations with respect to mine fleet emissions management but agrees with Albian that it would be inappropriate in this case to single out one oil sands mine developer with unique approval conditions. However, the Joint Panel notes that mine fleets are a major source of increasing NO_x emissions in the region and that not until the 2011 to 2015 timeframe will low NO_x Tier IV equipment start to be introduced and it will be even later before mine fleet equipment in service will be replaced. The Joint Panel believes that there may be merit in the development and implementation of retrofit NO_x and PM after-treatment technology for equipment not meeting Tier IV standards. Any regulatory decision to impose retrofit emission controls on mine equipment would have to consider the significance of NO_x and PM emissions reductions achievable, in terms of both regional emission rates at a given time and net cumulative reductions, having regard for the introduction of Tier IV equipment. These factors would have to be compared to the costs of the retrofits, impacts, or equipment operability and reliability and the risks the emissions pose to the environment. It may not be reasonable to impose retrofits if the shift to Tier IV equipment will achieve similar results within a few years. However, retrofits may be viewed as beneficial if it is possible to accelerate substantive net mine fleet emissions reductions by many years.

The Joint Panel believes that any decision to impose retrofit emissions controls should be based on technology development and assessment involving federal and provincial regulators with representatives of all oil sands mine operators. The Joint Panel recommends that EC and AENV work together to assess the need for a mine fleet emissions technology review and regulation development process.

With respect to the use of ultra-low-sulphur diesel fuel in mine equipment, the Joint Panel encourages Albian to continue its current practice and agrees with Albian that it would be inappropriate to impose such a condition unless it is necessary for proper functioning of engine emissions controls equipment. If and when this becomes the case, a requirement that applies to all mine operators may be appropriate and could be introduced following consultation with technology providers and mine operators.
The Joint Panel supports Alberta developing appropriate *EPEA* approval requirements to address

- fugitive emissions control (LDAR program),
- continuous benzene monitoring,
- VOC emissions monitoring,
- participation in CEMA and WBEA work to address trace air contaminants, including benzene and acrolein,
- participation in regional acid deposition and eutrophication monitoring programs, and
- GHG emission intensity targets.

The Joint Panel believes that Canada's recommendations related to the evaluation of existing baseline emissions and assessment of impacts on developed areas should be considered in the development of impact assessment terms of reference for future oil sands applications. The Joint Panel believes that further evaluation of NO_x-NO_2 conversion, as recommended by Canada, would appropriately be done through a regional oil sands industry committee with AENV and EC participation or alternatively through CEMA.

Regarding H_2S in TRS, the Joint Panel acknowledges that Albian is not a major source of sulphur emissions. However, it is important to fully understand this issue as it relates to model predictions in the communities. Therefore, the Joint Panel recommends that AENV, through the WBEA, determine the percentage of H_2S in TRS for the oil sands region and incorporate this value in all future regional modelling.

The Joint Panel considers that proponents of new or expanding oil sands schemes in Alberta need to be aware of reasonably foreseeable changes to current emission standards and new environmental management frameworks and the need to incorporate flexibility in the design of their projects to facilitate retrofitting of improved controls. The Joint Panel recommends that since changes to current source emission standards are reasonably foreseeable, it is prudent for proponents of new or expanding oil sands schemes to incorporate flexibility into their projects so that compliance could be assured within a reasonable time.

The Joint Panel concludes that the project is not likely to result in significant adverse environmental effects to air quality, provided that the mitigation measures and recommendations proposed are implemented.

10.2 Water Quality

10.2.1 Views of Albian

Albian stated that it assessed the potential effects of the MRME project on water quality and concluded that the expansion project activities would have negligible effects on the Athabasca River, Muskeg River, Jackpine Creek, and Isadore's Lake. Albian noted that no evidence had been submitted to contradict those conclusions. Albian stated that it was committed to verifying the predictions in the EIA, monitoring for and adaptively managing any unforeseen effects of its project. Albian noted that because this was an expansion of an existing project, it already had detailed monitoring and management programs in place for water, air, and terrestrial components of the project. Albian stated that if this application were approved, those current monitoring and management programs would be expanded to encompass the land base of the MRME.

Albian stated that it did not agree with Canada's water quality recommendation that Albian update modelled impact predictions as new data became available and that it include public reporting, as well as external scientific peer review. Albian stated that it disagreed that the EIA predictions were based solely on modelling. Albian noted that much of the water quality modelling predictions were based on an extensive database of empirical field observation data. Albian noted that updates to impact predictions were already being completed at a regional level and that it did not believe external review by a third party was required. Albian stated that it believed RAMP, CEMA, regulators, and other regional working groups had staff with expertise and experience to help guide those initiatives.

Albian stated that it did not support EC's recommendation that Albian collect further baseline water and sediment samples from the Muskeg River watershed prior to project initiation. Albian stated that its field program was comprehensive and met the Terms of Reference, which EC had reviewed and approved. Albian noted that its baseline study compiled new local study area information, along with existing regional information. Albian noted that the Muskeg River watershed was the most intensively monitored watershed in Canada and was therefore past the baseline collection phase and instead should be monitored for potential aquatic effects.

Albian stated that it did not support Canada's recommendation that Albian participate in research pertaining to the fate and potential toxic effects of contaminants on aquatic ecosystem health. Albian stated that its EIA predicted that the project would not have toxic release waters and that all receiving waters would remain below toxicity guidelines. Albian also stated that this research was already being completed through CONRAD.

Albian stated that it probably would be a good idea to have industry-specific water quality standards that would better reflect the species in the area and some of the contaminants for which guidelines currently did not exist. Albian stated that it would be willing to work on that with experts from AENV or through CEMA on that work. It added that it would continue to participate in the CEMA Surface Water Working Group (SWWG).

10.2.2 Views of MCFN

MCFN's concerns regarding water quality were associated mainly with tailings and EPLs. MCFN stated that it was not convinced that EPLs would transform into viable ecosystems. MCFN's views regarding the viability of EPLs are in Section 12.1.2 of this report.

10.2.3 Views of Canada

Canada stated that it was concerned whether existing monitoring programs captured the cumulative effects issue. Canada stated that the present approach of monitoring in the area was good but that a more integrated approach was required. Canada stated that a workshop with international experts considering the cumulative effects issue might be the best approach and that it expected Albian to participate in such a process. Canada stated that an external peer review of the recommended monitoring programs would be part of the process to communicate with increased transparency. Canada stated that the importance of the water quality modelling dictated its opinion that external peer review would be a good addition to the program. Canada stated that peer review would also help increase scientific engagement within the process, provide a broader examination of the materials, and increase overall confidence in the material.

EC stated that the cumulative effects from multiple oil sands projects had the potential to impact both small and large water bodies, including the sensitive, valued, and internationally recognized Peace-Athabasca Delta. EC stated that depositional areas might become accumulation sinks for contaminants from upstream sources. EC stated that past studies had indicated the need for flow regimes that maintained the ecological integrity of the delta, as well as water levels in Lake Athabasca. EC noted that further reductions in flows and levels, as well as any substances from oil sands developments dissolved in water, adsorbed to sediments, or air-borne, could further impact the productivity of the delta and surrounding lakes. EC requested that the Joint Panel recommend extending the aquatic resources regional study area in future oil sands EIAs to include the Peace-Athabasca Delta area and the western end of Lake Athabasca. EC stated that including the delta tied into the overarching goal of an integrated monitoring program.

EC noted that Albian's predictions of future water quantity and quality were based on modelling and that this modelling depended on certain assumptions and specific parameters. EC noted that failure to meet all of the assumptions could lead to greater uncertainty in water predictions. EC stated that it therefore believed it was necessary to update, refine, and validate models on a regular basis. EC therefore requested the Joint Panel to recommend that Albian update modelled impact predictions as new data became available through on-site and regional monitoring. EC requested that the Joint Panel recommend that Albian, in partnership with other industry and non-industry researchers, initiate research on water and sediment quality from multiple reclamation test areas representing all types of reclaimed landscapes, and that the results be used to validate water quality predictions in the Albian EIA. EC stated that results of that research should be externally peer reviewed and made public in the appropriate forums.

EC stated that rather than the chronic effect benchmarks used by Albian, water quality objectives should be developed for specific sites or regions within the Athabasca Oil Sands region. EC requested that the Joint Panel recommend that AENV implement site- or region-specific water quality objectives, especially for toxic substances for which provincial water quality guidelines did not currently exist. EC also requested that the Joint Panel recommend that Albian participate in, or facilitate if necessary, research pertaining to the fate and potential toxic effects of contaminants on aquatic ecosystem health. EC noted that CONRAD might be an appropriate forum for this recommendation.

EC noted that there were several existing and planned oil sands developments operating within the Muskeg River basin. EC stated that it was concerned that given the scale of development, water quality within the basin could be adversely affected to a greater degree than predicted. EC requested that the Joint Panel recommend that Albian continue to monitor the Muskeg River for cumulative effects on water and sediment quality and develop an action plan to address any additional adverse effects that might be detected. EC stated that it believed additional baseline samples should be collected prior to project initiation, including under-ice conditions and event-appropriate sampling, to ensure that hydrologic characteristics and water and sediment chemistry were completely characterized in all water bodies. EC stated that this baseline was required to establish adequate data for comparison in future monitoring and to evaluate the effectiveness of mitigation and the accuracy of predictions used for the project. EC also made recommendations related to site-specific water and sediment quality monitoring and water quality of release waters.

10.2.4 Views of Alberta

Alberta stated that given the level of development, more monitoring was required. This was not predicated on any results to date, but only on the uncertainty that existed with respect to both water yield and quality from the reclaimed landscape. Alberta noted that continued model validation and refinement would be required to ensure that project-specific and cumulative impacts were represented. AENV noted that any *EPEA* approval that may be issued might require Albian to continue to work with CEMA on topics that influenced impact predictions (e.g., EPLs, treatment wetlands, water quantity and quality) and to provide updates on future impacts as the collective understanding improved.

Alberta stated that it was of the view that improvements in water quality modelling and validation of model predictions were required. Alberta stated that Albian must continue to validate model predictions and results, test the underlying assumptions, and provide updates to environmental impact predictions. Alberta stated that Albian would be expected to assess water chemistry in runoff from reclaimed landscapes and provide updates if new information changed previous model predictions of impact. Alberta stated that should an *EPEA* approval be issued, it might contain a condition requiring Albian to provide a schedule for updating impact predictions.

Alberta stated that although management frameworks for wetland and EPLs were not urgently needed, work to provide assurance as to wetland and lake operating constraints and performance was considered a priority. Alberta indicated that should an *EPEA* approval be issued, it might contain a condition requiring Albian to provide a schedule for research into and reporting on advances in wetland and EPL science and management.

With respect to Canada's recommendation to expand the aquatics study area to include the Peace-Athabasca Delta, Alberta stated that such decisions should be made during development of the EIA Terms of Reference. Alberta noted that the EIA could lose some of its focus if the study area became too broad.

Alberta noted that CEMA was currently completing work on developing reach-specific water quality guidelines for the lower Athabasca River. Alberta stated that one of the goals would be to take the parameters identified in terms of performance measures for reporting the state of the environment for the lower Athabasca River and alter or create an index specific to this region.

10.2.5 Views of the Joint Panel

The Joint Panel believes that cumulative effects is the biggest issue facing the oil sands region. The Joint Panel would be supportive of Canada and AENV conducting a workshop with experts and stakeholders to examine the current monitoring programs in the region and to identify where improvements could be made in order to ensure that an integrated monitoring program exists that is capable of capturing cumulative effects in the oil sands region. The Joint Panel would expect Albian to participate in such a workshop. The Joint Panel notes that such a workshop could help to increase scientific engagement within the process, provide a broader examination of the materials and processes, and increase confidence that the programs are effectively monitoring for cumulative effects.

The Joint Panel notes that Canada indicated that Albian's participation in RAMP and CEMA was one way to address Canada's monitoring recommendations, but that there was still a need for monitoring to be integrated. The Joint Panel supports Canada's view that there is a need for integration of existing monitoring programs and agrees that information from such programs should be publicly available and that the programs themselves should undergo regular peer review. The Joint Panel acknowledges the importance of the Peace-Athabasca Delta and Lake Athabasca and agrees that both should be included in an overall integrated monitoring program for the region. The Joint Panel expects that the Watershed Management Plan for the Muskeg River being developed by CEMA will include an integrated monitoring program for cumulative effects in the Muskeg River basin.

The Joint Panel notes that additional site-specific monitoring may be required to ensure that impacts resulting from the MRME project would be indicated. The Joint Panel recommends that if additional site-specific monitoring is required, AENV include as a condition in any *EPEA* approvals that may be issued a requirement that Albian develop and implement, with input from DFO, EC, AENV, and other stakeholders, monitoring programs for sediment and water quantity and quality for waters that may be affected by the project. The Joint Panel reiterates that it also shares the view that ongoing validation of modelling results is a key component of any management approach that utilizes modelling. The Joint Panel recommends the ongoing review of EIA modelling practices by multistakeholder groups, such as CEMA. The Joint Panel expects Albian to implement any recommendations in modelling procedures that CEMA may produce.

The Joint Panel notes that CEMA is currently developing reach-specific water quality objectives for the lower Athabasca River, with a target of mid-2007 for completion. The Joint Panel recommends that AENV enforce the timelines for this work through the use of a regulatory backstop or applicant responsibility. The Joint Panel expects that Albian will support CEMA in its efforts to develop water quality objectives for the lower Athabasca River through participation and funding. The Joint Panel notes AENV's evidence that the parameters identified in the reach-specific water quality objectives work could be used to alter or produce an index specific to this region. The Joint Panel encourages CEMA to complete this work.

Given the uncertainty regarding the water yield and quality from the reclaimed landscape, the Joint Panel supports AENV including the following as conditions in any *EPEA* approval that may be issued:

- Albian to continue participation in CEMA working groups on surface water quality related matters;
- Albian to provide a schedule for testing and updating water quality modelling predictions; and
- Albian to provide a research schedule that includes the testing of EPL predictions and design features, with a physical test case undertaken in conjunction with other oil sands companies, and a report on advances in wetland and EPL science and management.

To conclude, the Joint Panel believes that by implementing a comprehensive monitoring plan, the suggested *EPEA* approval conditions, the Joint Panel's recommendations, and the mitigation measures identified by Albian, the MRME project is unlikely to result in significant adverse environmental effects on water quality.

10.3 Aquatic Resources

10.3.1 Views of Albian

Albian stated that its EIA included a basic evaluation of the baseline conditions and an evaluation of the potential impacts of the MRME project on the aquatic and halieutic resources as well as potential cumulative impacts on aquatic resources from other projects. Albian indicated that the evaluation of the initial conditions of the aquatic environment was done in a manner that was consistent with the studies completed for previous projects. Albian stated that it also based its work on the results of inventories carried out on certain rivers not previously inventoried. Albian indicated that it carried out an analysis of the impacts of the project on the fish habitat, on the abundance of the various indexed species, and on their diversity.

Albian noted that changes in fish habitat would occur as a result of flow variation and water bodies' modification during construction, operations, reclamation, and closure activities. Albian stated that it anticipated changes in habitat area, physical habitat conditions, benthic invertebrate food base, and accessibility of fish to their habitats. Albian stated that the development of the project would also include activities that would alter the drainage of watersheds and water bodies, resulting in the harmful alteration, disruption, or destruction (HADD) of fish habitat. Albian noted that under the terms of the *Fisheries Act*, these types of impacts would therefore require an NNLP that proposed mitigation and compensation measures. Albian noted that impacts would occur on the Muskeg River and Jackpine Creek, while habitat losses would occur in Mills Creek, Unnamed Watercourses 1, 3, and 4, and in Unnamed Waterbodies 1, 2, 4, and 5, for a total habitat loss of 674 862 square metres (m^2). Albian noted that the types of habitats destroyed would include water bodies, as well as watercourse sections of defined and undefined channels, beaver ponds, and transition zones.

Albian stated the other watercourse and water body areas that would be affected by the project's activities did not contain sustainable habitat for fish. Accordingly, the NNLP did not consider compensation for this type of loss.

Albian stated that the preferred compensation measures included the enhancement of an existing unnamed water body located southeast of the lower reaches of the Muskeg River. Albian stated that the compensation project would also include the construction of a natural geomorphic channel connecting the unnamed water body to the Athabasca River and a combination of riverine and lacustrine compensation habitats. Albian noted that the proposed location of the compensation lake was on FMFN reserve land and that the NNLP was in the process of being discussed with FMFN. Albian noted that an alternative location for the compensation lake would be directly east of the FMFN lands if an agreement on the currently proposed location could not be reached.

Albian stated that construction of the compensation lake and channel would be scheduled to occur at the start of the project activities that would affect fish habitat. Albian noted that it expected colonization of the compensation lake by invertebrates and algae to occur rapidly, within one to five years. However, Albian stated that natural colonization of the compensation lake by fish could take time due to the limited size and variable presence of some of the fish populations in the drainage area. Consequently, Albian expected some fish stocking to be required in order to establish the desired populations.

Albian stated that the compensation lake would consist of 15 per cent littoral zone and would have a surface area of 200 000 m^2. Albian stated that based on the results of hydrologic feasibility analyses, both the lake hydrology and water quality conditions would be suitable for maintaining viable benthic invertebrate and fish populations in the compensation lake. Albian stated that the area of confluence of the Unnamed Tributary with the Athabasca River would be modified from its original condition in order to create spawning, rearing, and feeding habitat for Athabasca River fish species and to allow fish to move into the compensation lake. Albian stated that eight species of fish would be reintroduced in the compensation lake: northern pike, yellow perch, white sucker, brook stickleback, fathead minnow, lake chub, pearl dace, and slimy sculpin. Albian noted that these species were known or were assumed to be present in the affected habitats and also were known to be present in the Muskeg River and Athabasca River watersheds. Albian stated that opportunities to introduce other species to the lake would have to be discussed with regulators and stakeholders.

Albian concluded that there would be no significant cumulative effects on the Muskeg River and Athabasca River watersheds as a result of the project. Albian predicted that the NNLP for fish habitat compensation implemented by it and all other developers would result in negligible residual cumulative impacts on fish habitat. Albian noted that there were other oil sands operators that might potentially affect fish habitat resources in the Muskeg River. Albian stated that it would therefore require clear direction from DFO on its recommendation to monitor the Muskeg River for cumulative impacts, including what aquatic parameters would need to be measured and what change in those parameters would indicate adverse effects on fish habitat in the Muskeg River.

10.3.2 Views of Canada

Canada stated that Albian had submitted a revised draft NNLP to DFO. DFO noted that the project had the potential to affect about 700 000 m^2 of fish habitat. DFO also noted that in addition to project-specific concerns, it was concerned about the cumulative environmental effects on fish and fish habitat as a consequence of changes in flow conditions and the successive elimination of water bodies within the Athabasca River watershed. DFO stated that it believed that the disturbance of large numbers of small channels could result in changes in timing of organic matter input, temperature regimes, peak flow hydrology, and sediment supply and routing and in reduced habitat availability, which could affect fish habitat productive capacity. Consequently, DFO recommended that Albian monitor the lower Athabasca River watershed for cumulative effects on fish habitat resulting from its project. DFO stated that should monitoring indicate adverse effects on fish habitat resources in the lower Athabasca River watershed as a result of the project's contribution to cumulative effects, Albian would be required to mitigate or compensate for the losses.

DFO stated that it was of the opinion that the fish habitat losses prior to the mine development could be compensated for if the NNLP provided a minimum of 2:1 fish habitat compensation based on habitat units (HU). DFO stated that should the compensation ratio not be met, Albian would be required, in consultation with DFO, to provide other habitat compensation measures until the compensation ratio was met.

DFO stated that it was concerned about the limited data and the number of assumptions within the modelling conducted for the NNLP. DFO recommended that Albian develop and implement a monitoring program to verify predictions related to quality and quantity of fish habitat compensation structures. DFO noted that the monitoring program would also need to address the uncertainties associated with modelling the productive capabilities of fish compensation habitats. DFO noted that any authorizations it might issue in relation to the project would contain specific conditions to ensure that mitigation measures for the protection of fish and fish habitat were implemented, that monitoring and follow-up studies to address the efficacy of mitigation measures and verify impact predictions were undertaken, and that habitat loss was identified or adequately compensated for.

DFO stated that it would continue to work with Albian to assist it to develop a detailed NNLP that included an estimation of the fish and fish habitat losses, mitigation measures, fish habitat compensation strategies, and monitoring.

10.3.3 Views of the Joint Panel

The Joint Panel acknowledges the concerns expressed by MCFN and Canada regarding fish habitat losses and the potential impacts of the MRME project on the aquatic resources on a regional scale. The Joint Panel notes that Canada was not opposed to Albian's proposed compensation lake, but that there is still uncertainty with respect to the conditions of the compensation lake. The Joint Panel recommends that DFO continue discussions with Albian towards establishing an NNLP that meets the objectives of the *Fisheries Act* in terms of fish habitat losses and disturbances and includes proper monitoring to better ensure and confirm the success of the compensation project.

The Joint Panel is satisfied that no net loss for this project can be achieved effectively. The Joint Panel believes that Albian's compensation approach takes steps to protect the aquatic environment. However, the Joint Panel believes that a strong monitoring plan is critical to ensure that fish and fish habitat effects are understood. The Joint Panel recommends that Albian, in consultation with DFO, develop and implement a monitoring program designed to verify predictions related to the quality and quantity of Albian's fish habitat compensation structures.

The Joint Panel is also concerned about the cumulative impacts on fish and fish habitat, including the disturbance and progressive disappearance of small channels. The Joint Panel recommends that AENV, EC, DFO, and other regional stakeholders consider approaches and establish the parameters required for regional monitoring for cumulative effects on fish habitat in the lower Athabasca River and Muskeg River watersheds. The Joint Panel notes that this could potentially be completed through a multistakeholder group such as CEMA. The Joint Panel expects Albian to participate in such a process. The Joint Panel's views on the need for integrated cumulative effects monitoring are also in Section 10.2.5 of this report.

The Joint Panel concludes that with the implementation of Albian's mitigation measures, an NNLP completed to DFO's satisfaction, and the Joint Panel's recommendations, the MRME project is unlikely to result in significant adverse environmental effects on aquatic resources.

10.4 Navigable Waters Protection

10.4.1 Views of Albian

Albian stated that it understood that both the Muskeg River and Jackpine Creek were considered navigable water bodies. Albian indicated that the Muskeg River was currently used for canoeing and kayaking on a moderately frequent basis, but that Jackpine Creek had a number of beaver dams and was not currently being used as a navigable waterway.

Albian indicated that it planned to build a conveyor bridge, a heavy hauler bridge, and a tailings pipeline crossing over the Muskeg River and that all three crossings would be designed so as not to affect the passage of small craft. Albian also stated that predicted changes to water levels as a result of the proposed project would not impact navigability on the affected water bodies. Albian stated that it was preparing its application for a *Navigable Waters Protection Act* authorization, which would follow the decision on the overall development.

10.4.2 Views of Canada

TC identified the Muskeg River as a navigable waterway capable of supporting traditional and recreational uses.

TC stated that the information provided by Albian identified that the two bridge crossings and the pipeline crossing had been designed as clear span structures with vertical navigation clearances greater than 4 m during normal summer water levels. TC advised that the vertical clearances proposed were likely sufficient to allow for the safe and continued usage of the waterway. TC did not raise any concerns with respect to changes in water levels.

TC stated that in its view it was unlikely that the proposed bridges over the Muskeg River would result in adverse effects on navigation, but it had not yet reached a conclusion on environmental effects.

TC stated that Albian had submitted preliminary designs for the river crossings. TC recommended that complete applications for all river crossing structures be submitted to TC for review and approval as soon as possible. TC stated its requirement that any information in relation to the type of compensation developed in the area be included in the final submissions.

10.4.3 Views of the Joint Panel

The Joint Panel notes that TC has determined that the Muskeg River is a navigable waterway and that works spanning it will require *Navigable Waters Protection Act* approvals from TC prior to construction. The Joint Panel also understands that TC has concluded that it is unlikely that the proposed bridges over the Muskeg River will result in adverse effects on navigation.

The Joint Panel is satisfied that TC's authorization process will ensure that navigable waterway protection issues are adequately addressed. The Joint Panel recommends that the proponent submit its application for *Navigable Waters Protection Act* authorizations to TC before mine construction begins. The application should include an evaluation of the potential impacts of these works on navigation, as well as details of any compensation developed in the area of the bridges. TC should identify any additional approval conditions necessary to ensure navigational safety and include these conditions in its authorization.

The Joint Panel concludes that by completing the evaluation of the potential impacts of the works on navigation and the implementation of any mitigation measures proposed by TC, the MRME project will not result in significant adverse environmental effects.

10.5 Need for EIA Follow-Up

10.5.1 Views of the Joint Panel

Under *CEAA*, the Joint Panel has a responsibility to conduct an assessment of the environmental effects of the MRME project. In conducting this assessment, the Joint Panel must ensure that all information required for its assessment is obtained and made available to the public.

The Joint Panel reviewed the information provided in the proceeding and concludes that it has sufficient information to conduct the assessment of the environmental effects of the project. It is satisfied with the information and concludes that the project is not likely to cause significant adverse environmental effects, provided that the all mitigation measures and the recommendations by the Joint Panel are implemented.

The Joint Panel considered the need and requirements for following up on the environmental assessment of the project. The specific areas identified by the Joint Panel for follow-up are

- tailings management,
- surface water quality and quantity,
- effects on fish and fish habitat,

- in-stream flow needs,
- effects on air emissions,
- Quarry of the Ancestors,
- asphaltenes transportation,
- relocation of Highway 63, and
- reclamation.

The Joint Panel is of the view that Albian should develop its follow-up programs in the early stages of the project, in collaboration with stakeholders that have expertise or an interest in the development of these programs.

Follow-up programs developed by Albian should

- ensure that results are communicated to stakeholders and the public;
- be developed with stakeholders that have specific expertise;
- include details of the mitigation measures to be implemented;
- include details of the monitoring methods, frequency, and duration; and
- include details of who is responsible for following up on the various parameters of interest and the frequency of reporting.

11 RECLAMATION

11.1 Reclamation, Soil, and Forest Resources

11.1.1 Views of Albian

Albian stated that the project area would be fully reclaimed over time, with phased reclamation activities through the life of the operation. The reclamation would provide equivalent capability consistent with predevelopment conditions. Albian noted that mining areas would be filled with the residual tailings sand, and once the sand had consolidated to a firm landscape, it would be capped with overburden, covered with soil, and revegetated to a productive landscape.

Albian advised that it would use a two-lift soil removal system that would allow it to keep both the A and B soil horizons separate and intact. Albian stated that soil stockpiles would be separated. Albian would replace soil according to original vertical arrangement of soil horizons. Albian noted that stockpile management would ensure that the upper 15 to 20 centimetres (cm) of topsoil stayed on top, thereby increasing the likelihood that the plant material, seeds, and propagules contained within would have a chance to germinate. Albian believed that it was a leader in soil handling and revegetation methodologies, including the use of the two-lift system, direct placement, direct seeding, outcropping, and nurse cropping.

Albian believed that its overall conservation and reclamation (C&R) would require an amendment to its currently approved C&R plan for the MRM. Albian stated that it did not support Alberta's recommendation in respect of the following conservation and reclamation practices:

- the use of upland soils,
- separate salvage of all upland surface material,
- priority on the salvage of good subsurface material, and
- increased depths of replaced peat/mineral mix.

Albian noted that it had already implemented Alberta's recommended best management practices for soil salvage and handling on a voluntary basis. Albian stated that it continued to carry out research and field trials to further develop best practices for the reclamation of disturbed lands. Albian said that it believed that including approval conditions reflecting Albian's current practices might stifle innovation by being overly restrictive.

Albian noted that it would continue to share information and to actively participate on CEMA's Reclamation Working Group. Albian believed that one of the objectives of the Reclamation Working Group was to develop best management practices that could be shared and used by all oil sands operators.

Albian believed that an appropriate way for it to work towards reclamation goals was to set a series of reclamation milestones and map out its plan to the regulatory authorities. Albian noted that its overarching goal continued to be timely, progressive reclamation.

11.1.2 Views of OSEC

OSEC noted that the expansion area would involve clearing an additional 8091 hectares (ha), a significant area to add to an already heavily disturbed regional landscape. OSEC also stated that new development was rapidly outpacing reclamation, resulting in a net increase to the oil sands footprint. OSEC noted that no oil sands operations had received reclamation certification from Alberta. OSEC was concerned about Albian's plan to proceed with development because of the uncertain reclamation strategies and approaches.

11.1.3 Views of MCFN

MCFN stated that its members had been occupying the region for the past 10 000 years. MCFN stated that it and the other aboriginal people who traditionally occupied the lands and used the waters between Fort McMurray and Fort Chipewyan were most directly affected by oil sands projects. MCFN stated that it was seeking certainty with respect to environmental protection and sustainable development so that its people would be able to continue their traditional way of life on the land. MCFN believed that it had the most to lose if the predictions of impact and reclamation success by the operators and regulators were not realized.

MCFN observed that important land-use policies and management frameworks for the oil sands region were outdated, such as the RSDS and the IRP. MCFN noted that other frameworks were just in the early visioning or development stage, such as the Oil Sands Strategy[5] and the

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[5] Albian hearing transcript volume 8, page 1956, line 14.

Provincial Land Use Framework.[6] MCFN strongly recommended that the Joint Panel address these issues by setting benchmarks for progress on reclamation and cumulative impact issues. The MCFN further requested that Alberta and the EUB take a stronger role in regulating oil sands development.

11.1.4 Views of Strathcona County Taxpayers Association (SCTA)

The SCTA stated that land reclamation should proceed a bit faster than it had in the past. The SCTA acknowledged that reclamation was a cost for the companies, but stated that reclamation at the existing oil sands mines was behind what would be considered to be reasonable and prudent. The SCTA stated that the Joint Panel should recommend to Alberta that reclamation requirements for the MRME be required in a timely and progressive manner.

11.1.5 Views of Alberta

Alberta stated that land conservation and reclamation should be conducted as required in Albian's current *EPEA* approval, with some immediate improvements. Alberta noted that through adaptive management, reclamation practice would be improved over time with implementation of best management practices. Alberta believed that additional research, monitoring, and adjustments to the tools used in site evaluation and reclamation planning, including the Land Capability Classification System (LCCS), would further improve reclamation results.

Alberta stated that some of Albian's reclamation practices that it described in the hearing were in accord with certain of the approval improvements that Alberta was seeking. Alberta observed that land conservation and reclamation planning needed to be integrated and coordinated between oil sands mine plans to be effective. Alberta advised that such integration was important to ensure optimal conservation and placement of soils.

Alberta stated that valuable reclamation resources might be lost without proper coordination between mine and reclamation plans. Alberta recommended that the EUB require Albian to coordinate drainage and landform design and vegetation patterns across lease boundaries and to demonstrate the success of these coordination efforts. Alberta noted that this might require Albian to cooperate with adjacent operators, the EUB, and Alberta.

Alberta stated that its position on reclamation risk has been informed by

- research undertaken by CEMA and in-depth discussions with CEMA stakeholders regarding LCCS deficiencies,
- direct field observations by SRD staff regarding post-reclamation vegetation communities, and
- relevant scientific literature.

Alberta further noted that there was a question as to whether existing reclamation practices would achieve the desired future ecosystems. Alberta questioned whether existing reclamation practices provided the soil and vegetation required to achieve secondary objectives related to wildlife habitat, biodiversity, and other end land use values.

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[6] Albian hearing transcript volume 8, page 1956, line 15.

Alberta stated that if the Joint Panel decided to approve the project, it support Alberta's requiring immediate improvements to material handling to enhance reclamation.

Alberta stated that any *EPEA* approval or public land disposition issued for the project could require Albian to adopt improvements to current conservation and reclamation practices. Alberta further stated that it might require Albian to participate in a multistakeholder process to further develop best management practices for reclamation. Alberta stated that any *EPEA* approval or public land disposition issued for the project could require Albian to participate in a multistakeholder program to develop a standard framework for measuring and determining reclamation performance.

Alberta requested that the EUB encourage Albian to discuss use, sharing, and scheduling of surface reclamation material with adjacent oil sands operators in a timely manner that ensured viability of seeds and vegetative propagules.

11.1.6 Views of the Joint Panel

The Joint Panel accepts that reclamation is a key regional issue with uncertainties that require adaptive management for resolution. The Joint Panel supports the continuing efforts that CEMA, Albian, the regional committees, and Alberta have made to determine appropriate reclamation strategies. The Joint Panel commends and supports Alberta's recommendations to immediately modify reclamation requirements to enhance reclamation. The Joint Panel also supports Alberta's recommendation for Albian to use, share, and schedule surface reclamation material with adjacent oil sands operators. Further, the Joint Panel expects Albian to comply with Alberta's direction to coordinate soil availability and vegetation patterns across lease boundaries. The Joint Panel expects Albian to provide the EUB, AENV, and SRD with appropriate planning and implementation proposals for joint review and AENV approval. The Joint Panel supports Alberta's request for Albian to demonstrate the success of intermine reclamation material coordination efforts.

The Joint Panel notes that Alberta will lead a regional committee to develop regional best management practices for reclamation in the oil sands region. The Joint Panel recommends that Albian actively support this initiative.

The Joint Panel observes that reclamation and reclamation performance are critical to returning the end land use capability. The return of those lands in acceptable condition and time frames is required in the public interest. The Joint Panel agrees with Albian's proposal that the progress of development contain the necessary milestones. The Joint Panel expects Albian to maintain the timelines for project development, including the achievement of CT targets and related reclamation milestones.

11.2 Biodiversity, Wildlife, and Wetlands

11.2.1 Views of Albian

Albian stated that there were currently no reclamation standards or guidelines that specifically addressed the re-establishment of biodiversity. Albian noted that the Reclamation Working Group and Albian had and would continue to research techniques to re-establish biodiversity and to work with aboriginal stakeholders to establish traditional vegetation species on the landscape.

Albian advised the Joint Panel that Albian had agreed to support a $4 million habitat offset project and to fund some of the Alberta Biodiversity Monitoring Program sites when the program was implemented. Albian indicated that it was voluntarily researching the use of best management practice techniques to re-establish plant species and ecosystem biodiversity on its reclaimed sites. Albian stated that it salvaged and directly placed the litter-fumic-humic (LFH) layer on reclaimed lands whenever feasible.

Albian noted its reclamation monitoring and commitment to resolve the concerns expressed by MCFN. Albian stated that the progress of soil and vegetation development and wildlife re-establishment would be closely monitored and benchmarked against existing strategies. Albian noted that these strategies included the new ecosystem and biodiversity indicators being developed by the Reclamation Working Group. Albian stated that performance tracking and benchmarking formed part of its adaptive management program under its ISO 14001 certified environmental management system.

Albian stated that the Reclamation Working Group's efforts included

- potential reconstruction of fens,
- development of a forecast model to predict the soil and vegetation prescriptions required for various ecosystems and biodiversity, and
- inventories of natural ecosystems to use as benchmarks for performance monitoring of soils and vegetation re-establishment in reclaimed areas, including biodiversity and development of a manual on criteria and indicators of ecosystem function for reclaimed oil sands sites (indicators would include vegetation structure, species diversity, and ecosystem functions).

Albian noted its commitment to ensure that First Nations were involved and traditional uses of the land were preserved and, where possible, enhanced. Albian made a commitment to monitor the project by adding to its existing approved MRM monitoring programs. These revised programs would provide feedback to management systems on the effects of development and mitigation activities on terrestrial resources, wetlands, and biodiversity.

Albian stated that EC had requested it to do a comprehensive Yellow Rail survey in the region. Albian believed that there were currently sufficient data regarding Yellow Rail distribution and habitat requirements to conclude that the project would have a low effect on Yellow Rail habitat in Alberta, and therefore further surveys by Albian were not justified.

Albian proposed to MCFN that Albian would assist with the development of benchmark requirements and monitoring for biodiversity and reclamation. Albian proposed that the most appropriate forum for development of the benchmark requirements would be the Reclamation

Working Group. Albian also noted that it would assist MCFN in those programs so it would have direct input into any benchmarks or guidance established regarding biodiversity and reclamation.

11.2.2 Views of MCFN

MCFN was concerned that appropriate vegetative and wildlife reclamation targets should be established with respect to timing and biodiversity. MCFN noted that it had entered into an agreement with Albian that had resulted in an action plan. MCFN advised that the action plan permitted it to provide input into reclamation design and monitoring.

MCFN stated that Albian had made many promises, which, if kept, would help alleviate many concerns and might eventually resolve some uncertainties. MCFN stated that it was seeking certainty about the way the land would look and function in the future. MCFN stated said that it found it very difficult to agree with Albian that biodiversity would be re-established to approximate a natural boreal ecosystem.

MCFN stated that its key areas of concern were

- wildlife recolonization of disturbed landscapes,
- integrated regional wildlife planning,
- disturbance and ecosystem shifts, and
- old-growth forests.

MCFN was uncertain whether Albian's reclamation efforts alone could achieve success with tailings management, EPLs, reclamation, and biodiversity and sought greater certainty. MCFN believed that regional coordination of reclamation would be necessary for the effective development of wildlife habitat. MCFN stated that it was seeking establishment of updated regional management plans that contained benchmarks over the life of the project for the achievement of acceptable targets for wildlife habitat, wildlife populations, and biodiversity within reclamation areas.

MCFN requested that Albian and responsible authorities develop regional action plans addressing cross-lease planning for wildlife movement, wildlife habitat, cooperative mining, reclamation, and restoration plans. MCFN also requested that the benchmarks established become reclamation targets with regulatory backstops.

MCFN stated that ecosystem shifts might occur if sudden and drastic change of ecosystem configuration occurred in areas where disturbance or clearing approached 50 per cent of the total landscape cover. MCFN believed that there was a high likelihood of an ecosystem shift due to the project, where 68 per cent of the local study area would be disturbed during the first 49 years of the project. As a result of such an ecosystem shift, conditions for reclamation and natural recruitment of vegetation and wildlife could be altered. MCFN stated that the changes in ecosystem configurations brought about by clearing of land cover in this and other projects could represent a change in the ecological processes of undisturbed landscapes. MCFN believed that it was not clear if recovery through adaptive management and progressive reclamation would occur quickly enough to avoid ecosystem shifts. MCFN believed that disturbed lands would not be able to repopulate naturally with diverse vegetation and wildlife species necessary to support future traditional land-use activities. MCFN recommended that regulators define and include indicators of ecosystem shifts for monitoring targets for adaptive management processes, and that these targets be backstopped by the appropriate regulatory authority. MCFN requested that the Joint Panel recommend to Alberta that it define and include signs of ecosystem shifts as indicators for monitoring and as triggers for adaptive management strategies.

11.2.3 Views of Canada

Canada stated that EC and the other federal authorities' submissions provided expert opinions and evidence with regard to potential adverse environmental effects. Canada believed that its submissions suggested appropriate mitigation measures and recommendations for the Joint Panel to condition an approval so as to address the significance of adverse environmental effects caused by the expansion.

EC noted that it was responsible for the *Species at Risk Act* (*SARA*), which provided for the protection and recovery of listed species at risk in Canada. EC further noted that *SARA* required Albian to identify any adverse impact on listed species, identify measures to avoid or lessen those impacts, and undertake monitoring to determine the effectiveness of mitigation or identify where further mitigation was required.

EC noted that land-clearing activities conducted during the migratory bird breeding season could result in the destruction of migratory bird nests. EC further noted that the development of the project would require the disturbance of 12 474 ha of forested lands over 48 years, which would significantly and negatively affect migratory birds, biodiversity, wetlands, and any species at risk located within the development area.

EC stated that the *Migratory Birds Convention Act (1994)* and Subsection 6(a) of the *Migratory Birds Regulation* prohibited the disturbance or destruction of migratory bird nests. EC supported Albian's commitment to avoid land clearing during the period of April 1 to August 31 of each year.

EC observed that the Short-eared Owl and Yellow Rail birds had been observed within the immediate vicinity of the proposed project. EC believed that additional information was required on the regional distribution and abundance of Yellow Rail. EC requested that the Joint Panel recommend that Albian lead, in cooperation with other oil sand companies, a region-wide census of the Yellow Rail, using accepted methods.

EC noted that tailings ponds posed a risk to migratory birds. EC supported Albian's commitment for the use of a radar-activated, on-demand bird deterrent system for the project.

11.2.4 Views of Alberta

Alberta stated that SRD would provide advice and direction to Albian on mitigation and other measures that could be taken to support the sustainability of wildlife resources, as mandated under current regulations, policies, and the *Wildlife Act*. SRD would also monitor Albian's management strategies, practices, and supporting requirements set for wildlife resources.

Alberta believed that coordinating reclamation could also help optimize the use of valuable surface soil resources across lease boundaries, resulting in better reclamation performance that more closely approximated natural ecosystem functions, including biodiversity and hydrological regimes.

Alberta stated that any *EPEA* approval that might be issued for the project might require Albian to provide a schedule for research into and reporting on advances in wetland management.

11.2.5 Views of the Joint Panel

The Joint Panel notes that the issues of biodiversity, wildlife, and wetlands are important to stakeholders, Alberta, and Canada. The Joint Panel supports CEMA's efforts to understand and to develop guidance documents on these issues.

The Joint Panel encourages Alberta to lead CEMA committees to develop regional wildlife habitat reclamation, regional wildlife management, and wetland reclamation strategies. These strategies will provide industry and government with the resource stewardship guidance sought by stakeholders.

The Joint Panel expects Albian to be an active participant on CEMA committees to assist with the development of effective wildlife habitat reclamation, regional wildlife management, and wetland reclamation strategies to address stakeholder concerns.

The Joint Panel also expects Albian to implement all CEMA reclamation and land management strategies approved by Alberta.

The Joint Panel notes EC's concern that the Yellow Rail (listed in *SARA* as a species of Special Concern) is affected by the intensity of regional development. The Joint Panel recommends to Alberta that within the next two years AENV, in collaboration with EC, coordinate a review of the cumulative impacts on Yellow Rail in the oil sands region using appropriate regional nocturnal surveys in areas of potentially suitable habitat. The initiative should also determine mitigation options to minimize the impacts on the Yellow Rail. The Joint Panel recommends to Alberta that AENV establish requirements within any *EPEA* approval to implement the findings of the Yellow Rail initiative for surveys, determination of effects, and mitigation strategies where appropriate.

The Joint Panel expects Albian to implement effective Yellow Rail habitat mitigation strategies in its reclamation plans.

By implementing mitigation measures and recommendations proposed, the Joint Panel is of the view that it is unlikely that the project will cause significant adverse environmental effects on biodiversity, wildlife, and wetlands.

11.3 Landscape Design and Coordination of Mine and Reclamation Plans

11.3.1 Views of Albian

Albian stated that it would be using all the CEMA guidelines for reclaiming landforms, soil, vegetation, wetlands, and wildlife habitat. Albian advised that it had consulted with adjacent developers to ensure a common approach for closure planning and drainage coordination. Albian stated that its plan was to ensure that mine plan changes continued to lend themselves to coordinated closure planning. Albian also stated that its progress in research and the development of best practices in the area of reclamation was provided to stakeholders in its Annual Environmental Report. Albian observed that its knowledge and practices had evolved with respect to reclamation and that its key principles, philosophies, and best practices had not changed.

11.3.2 Views of Alberta

Alberta stated that the IRP provided direction on coordinated reclamation within Section 2.0 of Albian's current *EPEA* approval. The approval required Albian to integrate reclamation within its mine and adjacent lands. Alberta believed that regionally this integration had not been as effective as needed.

Alberta observed that Albian's final drainage plan for the MRME project and portions of its existing lease relied on Syncrude's final drainage plans. Alberta was aware that operators had concerns related to liability issues associated with coordinated reclamation. Alberta believed that due to the cost of material movement and availability of soils on these large-scale mine sites, it was unlikely that landforms could be changed once they were constructed.

Alberta stated concerns about the sustainability of reclaimed landforms, including landscape stability, requirements for ongoing maintenance, and contaminant remediation. It stated that reclamation should be planned and carried out at the project, adjacent lease, and regional levels to produce less fragmented, if not seamless, reclaimed landscapes.

Alberta believed that coordinating landscape design and end land use plans across lease boundaries was required to

- ensure the continuity and integration of drainage and landform design across lease boundaries to manage drainage from the reclaimed land,
- improve reclamation performance to more closely approximate hydrological regimes, and
- create more natural appearing and functional boreal landscapes.

Alberta stated that it believed mine planning, reclamation, and water management were linked. Alberta noted the shared relationship between it and the EUB with respect to mine and reclamation planning and that the two tasks were linked. Alberta stated that to achieve the required level of project planning would require approval conditions within Albian's EUB and *EPEA* approvals for coordination of mine plans for landscape design and reclamation at mine borders. Alberta recommended that the EUB require Albian to demonstrate the success of its coordination efforts.

Alberta stated that to create a level playing field with other oil sand mines there may be a need for AENV and the EUB to consider other existing oil sands mine approvals. Alberta stated that it was seeking the EUB's assistance to help Alberta implement coordinated mine, reclamation, and watershed management planning.

Alberta stated that any *EPEA* approval that might be issued for the MRME project might require Albian to

- participate in and work cooperatively with any regional level end land use working groups,
- prepare an end land use plan that demonstrated integration of drainage and landform design across lease boundaries, and
- develop preliminary landform design elevations within a specified time period.

Alberta recommended that the EUB require Albian to coordinate drainage and landform design across lease boundaries and demonstrate the success of these coordination efforts.

11.3.3 Views of the Joint Panel

The Joint Panel recognizes the need that AENV identified for local and regional landforms and watershed designs having a natural appearance in order to better achieve sustainable end land use capabilities. The Joint Panel notes that the EUB's mandate includes the management of oil sands mine waste and discard. The EUB requires landform designs to be safe, efficient, and stable. The Joint Panel recommends that AENV and SRD collaborate with the EUB to review mine plans and coordinate their respective requirements.

The Joint Panel expects Albian to comply with Alberta's direction to coordinate drainage and landform design across lease boundaries. The Joint Panel also requires Albian to provide the EUB with appropriate five-year planning and implementation plans for approval in order to better ensure that adequate mine design and development coordination occur.

11.4 Viability of EPLs

11.4.1 Views of Albian

Albian stated that it had designed and modelled its EPLs to be capable of supporting viable aquatic ecosystems, including forage fish. Albian noted that its EPLs and its reclamation drainage paths were not part of its NNLP for fish habitat. Albian also noted that while the water quality within the EPLs was improving, the EPLs would not be accessible for traditional land uses until after the management period and certification were received.

Albian stated that the EIA was based on conservative assumptions and did not predict any exceedances of water quality toxicity thresholds after the management period. Albian noted that the decision reports from the Shell Jackpine and CNRL Horizon applications requested that within 15 years following 2003, adequate work be completed to verify that EPLs were feasible. Albian noted that it was currently well within that 15-year time frame for getting a large-scale pit lake completed to test the modelling predictions. Albian stated that the CEMA pit lake guidance document for the construction design and operation of EPLs would be completed by 2009 and

Albian noted that field testing to validate model predictions could occur at Syncrude's Base Mine Lake beginning in 2009.

Albian stated that it was confident that EPLs would work in terms of water treatment and establishing viable aquatic ecosystems within a defined management period. Albian noted that the water would meet the regulatory standards enforced by AENV. Albian stated that it would continue to participate in the CEMA End Pit Lakes Subgroup (EPLSG) by providing funding and participating in research on pit lakes. Albian pointed out that the main objective of that multistakeholder group was to create a document for industry and regulators that would provide guidance on sustainable development and management of pit lakes. Albian noted that the EPLSG was modelling the physical, chemical, and biological aspects of end pit lakes. Albian further noted that the refined pit lake model being developed at CEMA would include both water quality and biophysical components and benchmarks. Albian stated that it had also recently submitted a proposed research plan for pit lakes, as required under Shell's Jackpine Mine Phase 1 *EPEA* approval, which reflected the steps developed through the EPLSG. Albian stated that extensive end pit lake research was also occurring through the Fine Tailings Fundamentals Consortium and CONRAD. Albian noted that all of this research would be completed before the pit lakes were developed for its project.

Albian stated that in the very unlikely event that pit lakes did not perform as predicted, the filling periods could be adjusted to provide longer residence and treatment time, additional wetlands, and longer drainage ditches. It said that larger littoral zones could be created to provide further treatment, fertilization, and aeration and improve water quality.

Albian stated that it consulted with each of the MRME key stakeholders on environmental issues, including pit lakes, and no modifications of the MRME pit lakes were required based on those consultations. Albian noted that MCFN had agreed to an action plan that would continue to address its concerns and that it was committed to working with MCFN.

11.4.2 Views of MCFN

MCFN stated that a mechanistic or reductionist understanding and approach to the biological processes in EPLs were required. MCFN stated that due to the intricacies related to establishing the necessary trophic levels that would result in a viable ecosystem and the complex biological processes that would have to be established, it had doubts that EPLs would turn into functioning ecosystems. MCFN stated that it sought certainty that the required morphology, trophic levels, biological processes, and littoral zones would be successfully attained. MCFN requested that the Joint Panel recommend that it was not in the public interest to approve a reclamation process centred on placing tailings in EPLs. MCFN stated that if better reclamation practices did not exist, the project should be delayed until such practices were available. MCFN stated that if the Joint Panel decided to approve the MRME project, MCFN requested the Joint Panel to include as a condition of approval that Albian monitor EPL performance to determine whether each successive level of biological processes required to support fish was successful. MCFN stated that this should include setting targets for phytoplankton production, secondary production by zooplankton, and the establishment of macrophytes. MCFN stated that once the phytoplankton and zooplankton communities were established, Albian should assess the rates of nutrient recycling. MCFN stated that Albian should also be required to examine the dynamics of the food web in conjunction with the decay in concentration of possible pollutants that were present in

EPLs. MCFN noted that a further consideration would be the maintenance of water quality year round, taking into account the tailings water interface, wind, and fetch effects.

MCFN stated that it supported the target that viable EPLs would be inhabited by fish. MCFN noted that Albian stated that fish in the EPLs would be fit for human consumption, but given that MFT would be present at the bottom of the lake, MCFN was concerned about contaminants that might be present in the fish tissue. MCFN stated that Albian had identified the human and fish implications of selenium, but MCFN remained concerned about mercury and polycyclic aromatic hydrocarbons (PAHs). MCFN noted that while initial concentrations of these chemicals might be small, they accumulated in the food chain. MCFN stated that the toxicity of EPLs would also affect the health of the fish with effects that could include physiological stress, impaired reproduction, lesions, tumours, and altered growth. MCFN stated that it was seeking assurance beyond modelling that a healthy ecosystem would persist all the way to the top predator. MCFN stated that it wanted Albian to commit to establish a process to address the concerns MCFN had raised about fish and their habitat. MCFN noted that if EPLs were to be stocked with fish, long-term monitoring of aquatic ecosystem health would be required.

MCFN requested that the Joint Panel make it a condition of approval that Albian conduct long-term monitoring of aquatic ecosystem health. MCFN also requested that the Joint Panel recommend that Alberta and Canada also require Albian to conduct monitoring. MCFN further requested that the Joint Panel recommend to Albian, Alberta, and Canada that burbot be introduced to the EPLs because burbot were an important part of the diet of the members of MCFN and would complement the lake ecosystem. MCFN stated that should the project be approved, it would continue to work with Albian to develop benchmarks for tailings, EPLs, and reclamation success. MCFN urged the regulators to ensure that these developed benchmarks be met.

11.4.3 Views of Canada

EC noted that MFT were a source of many contaminants, including PAHs and certain metals. EC stated that Albian's modelling had indicated relatively rapid decay of PAHs in EPLs, but pointed out that metals were not subject to decay. EC noted that despite the predicted rapid decay of PAHs, elevated levels of PAHs had been observed in wetlands treated up to nine years earlier with MFT or CT and capped with process-affected water. EC also noted that naphthenic acids (NA) concentrations in EPLs were predicted to be less than one part per million when water releases began about 20 years after filling started. However NA concentration in some of the experimental or oil sands material-affected ponds at Syncrude and Suncor sites were typically an order of magnitude greater as late as 30 years after construction. EC stated that it remained concerned about the fate and potential adverse effects of PAHs, other sediment-associated contaminants, and NAs on aquatic life in EPLs, wetlands, and other water bodies that would receive drainage from EPLs. EC noted that Albian was currently involved in a number of research initiatives in the oil sands area, and it commended Albian's commitment to continued participation in regional initiatives and other programs.

EC recommended that Albian continue to collaborate with oil sands companies and other partners to increase EPL and wetland research, investigating the fate and effects of substances of concern in those types of aquatic ecosystems. Results of such investigations should be used to enhance reclamation strategies for on-site aquatic ecosystems.

11.4.4 Views of Alberta

Alberta stated that while it would be a number of years until the first EPLs were in place in the region, the complexity and uncertainty about their function made it a priority that ongoing, comprehensive research occur. Alberta stated that it expected greater attention to be paid to validation of models by providing near-future timelines for the construction of a test case in the oil sands area. Alberta stated that should an *EPEA* approval be issued, it could contain a condition requiring Albian to provide a schedule that included the testing of EPL predictions and design features on a physical test case in partnership with other oil sands companies.

AENV noted that increases of PAHs observed at one particular site were currently under evaluation and that information strongly supported the conclusion that the increases were due to localized erosion of bank material. AENV noted that RAMP data supported that three decades of oil sands operations in the Fort McMurray area had resulted in no measurable effects on PAH levels in sediments or biota in the oil sands region. AENV stated that monitoring had not indicated that PAH concentrations were increasing in the Muskeg or Athabasca Rivers.

11.4.5 Views of the Joint Panel

The Joint Panel notes that the EPL reclamation strategy remains an unproven and unapproved reclamation option. The Joint Panel also notes that the CEMA EPLSG, CONRAD, and others are conducting research that will address many of the concerns expressed by MCFN regarding the viability of EPLs and their ability to support higher trophic levels, including fish. The Joint Panel notes MCFN's concerns and agrees that there are many uncertainties regarding the efficacy of EPLs. The Joint Panel also notes that the decisions on the Shell Jackpine and CNRL Horizon applications requested that the efficacy of EPLs be proven within 15 years following 2003. The Joint Panel expects that an EPL's ability to support higher trophic levels, including what would be the most appropriate species composition of an EPL, will be a part of those determinations. The Joint Panel recommends to AENV that burbot be added to the list of species to be tested for compatibility with EPLs containing tailings.

The Joint Panel agrees with MCFN and AENV that due to the complexity and uncertainty about EPLs, it is a priority that ongoing, comprehensive research occur now. The Joint Panel supports the use of Syncrude's Base Mine Lake as a test project beginning in 2009. The Joint Panel encourages Albian to work with Syncrude and other oil sands industry members on developing this demonstration lake to ensure the viability of this reclamation concept. The Joint Panel does not believe, however, that Albian should wait until the availability of Syncrude's Base Mine Lake before initiating research. Instead it should look for opportunities to conduct small-scale projects. The Joint Panel expects that Albian will continue its participation on the CEMA EPLSG.

Therefore, commencing with its annual report due on February 28, 2008, the Joint Panel will require Albian to submit to the EUB on an annual basis a report that describes Albian's EPL research and development efforts for the previous year and the plans and timelines for completion of a demonstration lake. This report should include all of Albian's efforts and its contributions to any industry collaboration on an EPL demonstration. The Joint Panel supports Alberta's suggested *EPEA* approval condition requiring Albian, in conjunction with other oil sands companies, to provide a research schedule that includes the testing of EPL predictions and design features with a physical test case.

The Joint Panel believes it is unlikely that there will be significant adverse environmental effects with the implementation of proposed mitigation measures and recommendations.

11.5 Reclamation Liability

11.5.1 Views of Albian

Albian stated that Shell, Chevron, and Western Oil Sands Inc. were named in the *EPEA* approval and were accountable for reclamation. Albian concluded that it was also accountable for reclamation liability. Albian commented that the taking of security by Alberta was a backstop measure that would provide for reclamation in the event the operator was insolvent.

Albian noted that in the current security calculation guidelines, a tailings dam was considered a liability because of the amount of work necessary to restore the land to a safe and stable landscape. It said that security requirements included modifications for moving tailings and placing soil on landforms to create a safe and stable landscape and that security was intended to address tailings, dams, and other structures containing tailings that were moved into an end pit lake. Albian noted that overburden dumps and tailings dams were capped with soil and revegetated, and that resloping of mine pit walls allowed an existing mine pit to be filled with water to create an EPL.

Albian pointed out that calculations to reclaim an EPL that contained tailings included the cost to move the tailings. Albian stated that the plant area was not considered in the taking of security for oil sands mines and that security requirements did not include calculations for potential groundwater contamination.

Albian stated that a security calculation accounted for the disturbance that was anticipated to occur in the coming year. Alberta determined what was necessary for resloping of the land, soil placement, and revegetation based on the most recent mine plan submitted to the EUB.

Security amounts included in an operator's annual reports were a rolled-up number that did not provide extensive detail. The calculations related to the cost of insurance and the cost of other reclamation performance measures considered by the operator to be proprietary. The existing annual liability calculation update was the present basis for determining reclamation security requirements.

11.5.2 Views of MCFN

MCFN stated that it understood that security for reclamation was required under the *EPEA* regulations and that the cost of decommissioning the hard plant was not included in the calculation of securities. MCFN was concerned that liability calculations were not subject to public review or scrutiny and that the security was returned annually based on the placement of soil on landforms.

MCFN stated that gaps in the security collected for reclamation included liability for

- decommissioning of the plant,
- groundwater contamination and treatment of water in EPLs,
- removal of MFT from EPLs,
- treatment of MFT from the EPLs should they not perform as expected, and
- achieving wildlife biodiversity.

MCFN maintained that the current security regime did not provide it or Alberta residents the certainty that their descendants would not become responsible for reclamation deficits.

MCFN said that it was advised by Alberta that sufficient securities had been calculated and collected from oil sands operators for existing mine development liabilities. It was also told that a Mine Liability Management Program was under development but was concerned that it had not been allowed to examine it.

MCFN requested that the Joint Panel recommend to Alberta that it

- disclose to the MCFN and Alberta residents the information and determinations used to calculate security requirements;
- ensure that security requirements were based on the full long-term costs related to re-establishing equivalent capability, not on materials moved and placed; and
- undertake such regulatory or legislative amendments as required.

11.5.3 Views of Alberta

Alberta stated that reclamation security considered known reclamation practices required to resolve liabilities to an end point that did not require human intervention and as such would include movement of MFT into an EPL. Alberta advised that end land use capabilities were addressed at the time of reclamation certification.

Alberta stated that where a risk of not achieving end land use capabilities existed, it would revisit its conservation and reclamation requirements within approvals. Alberta further stated that when reclamation certificates were issued for reclaimed oil sands mines, Alberta became responsible for the land reclamation liability and assumes the risk that end land use objectives might not be met.

Alberta advised that the Mining Liability Management Program was a draft document under development for about two years. Alberta believed that there would be consultation with respect to the program before implementation to provide for greater transparency.

11.5.4 Views of the Joint Panel

The Joint Panel acknowledges that the current security program does not require a deposit or the posting of security with respect to total project liabilities and that work is under way to address the shortcomings of the existing program. It is the Joint Panel's view that a liability management program should provide a financial mechanism for funding of total project liabilities, including decommissioning of project facilities, reclamation/remediation of all disturbed lands, and any end-of-project-life monitoring that may be required for each project. The Joint Panel expects Albian to fully comply with the new liability management program when it is implemented and to meet the disclosure obligations that will be outlined in that program.

12 REGIONAL INITIATIVES

12.1 In-stream Flow Needs (IFN)

12.1.1 Views of Albian

Albian noted that water withdrawals from the Athabasca River was an important issue in the oil sands region. Albian therefore committed to managing water withdrawals and minimizing raw water use for its projects wherever possible. Albian stated that it had taken steps to improve its water management, including

- separating and managing clean water and process-affected water streams for maximum operational efficiency and recycle,
- allowing surface water from undeveloped areas to continue to flow to nearby streams, and
- effectively managing site water inventories, including the use of tailings thickeners to recycle water and reduce peak water diversion from the Athabasca River.

Albian stated that part of the optimization process also included its ability to take advantage of established on-site inventories of recycled water that would not be available during peak water requirement periods projected for the MRM.

Albian stated that it would be able to increase its production capacity by 75 per cent without exceeding its current *Water Act* licence allocation of 55.1 million m^3 per year. Albian stated that over the long term it would be evaluating its NST management plan for ways to further reduce its water consumption. Albian stated that it was supportive of the pending joint AENV/DFO IFN Water Management Framework and was committed to complying with its requirements. Albian stated that the framework was consistent with the RSDS, AENV's Water for Life Strategy, and DFO's habitat protection strategy. Albian committed to working with other developers and AENV on implementation details and to meeting the requirements of Phase I of the framework once implemented. Albian noted that Phase I was a prescription for water withdrawals based on existing infrastructure, current understanding of the aquatic ecosystem requirements, regulatory and legal constraints, and water demand. Albian stated that it believed Phase I was precautionary and would be protective of the aquatic ecosystem. Albian stated that it could meet the requirements in Phase I of the Water Management Framework so long as it retained first-in-time, first-in-right principles.

Albian noted that no amendment was currently required to Albian's existing *Fisheries Act* authorization for its water intake. However, Albian noted that once the joint AENV/DFO IFN Water Management Framework was finalized, it could lead to an amendment to Albian's existing *Fisheries Act* approval for the Muskeg River water intake.

Albian noted that Canada indicated that its four recommendations related to Phase II of the framework could be fulfilled through participation in a multistakeholder group as part of the IFN

Water Management Framework or as part of the existing RAMP program. Albian noted that on that basis, it did not object to those recommendations.

12.1.2 Views of ACFN

ACFN stated that the IFN Water Management Framework was the greatest immediate concern of the First Nations, because it did not believe the framework would sufficiently protect the Athabasca River. ACFN noted that the framework was still in draft form and that it was hopeful that changes would be made to provide adequate protection. ACFN stated that AENV's conclusion that the proposed framework provided a good balance of economic and environmental factors was questionable given all of the research that Canada and Alberta stated was needed by 2010. ACFN stated that scientific uncertainty was not a reason for a less conservative IFN Water Management Framework. ACFN noted DFO's evidence that the withdrawal limits set out in the draft might be encroached upon by 2008. ACFN stated that it was concerned that the timelines in the framework were unrealistic and therefore not likely to be achieved, resulting in the interim withdrawal limits being in place indefinitely. ACFN stated it was also concerned that water allocations issued over the next four years would make a more restrictive IFN harder to implement if the research conducted suggested that a more restrictive regime was necessary. ACFN acknowledged that Albian was not applying for an increase in its water licence, but it recommended that Albian be required to take immediate steps to increase its water efficiency and develop alternatives to planned increases in water withdrawals.

12.1.3 Views of MCFN

MCFN stated that when considering water withdrawals from the Athabasca River and its tributaries, the biological or ecological sustainability of the river should be the number-one concern.

MCFN indicated that DFO had initially promoted the concept of an ecosystem base flow (EBF), or cutoff withdrawal limit, which had been included in earlier drafts of the framework but had subsequently been removed. MCFN stated that it was concerned about the removal of the EBF, as it believed its inclusion was the correct approach given the limited knowledge about and understanding of the Athabasca River. MCFN stated that with an EBF there would be no reduction in habitat area from the natural aquatic habitat at very low flows, but without an EBF there was potential for reduction in the natural aquatic habitat and consequent biological impacts at very low flows. MCFN noted that changes had also been made to the total cumulative diversion rate target and to the Phase II process as it related to DFO's *Fisheries Act* implementation plan. MCFN stated that it was concerned that these changes were resulting in a framework that would not be protective of the Athabasca River. MCFN stated that its expectation resulting from the joint panel hearings in 2003 was that there would be a threshold for winter withdrawals in the Athabasca River. MCFN stated that it was not in the public interest to further expand oil sands development without first knowing definitively that such expansion would not significantly impact the Athabasca River.

MCFN indicated that there was a limited understanding of fish wintering, spawning, rearing and of migratory use of the Athabasca River. MCFN noted that there was also a lack of information on the Peace-Athabasca Delta. MCFN stated that the numerous uncertainties were reason to be more conservative with the framework than what was currently proposed. MCFN requested that the Joint Panel recommend to Canada and Alberta that they re-evaluate the proposed Phase I of the IFN framework to include

- an EBF for all weeks of the year,
- designated water withdrawals for all licence holders based on the EBF,
- no water withdrawal below the EBF in the winter,
- new and unused portions of existing licences being subject to DFO authorization,
- letters of credit being required for monitoring, compensation, and construction of water storage facilities, and
- refinement of the IFN framework every five years.

MCFN also recommended that Albian commit to the research, consultation, and monitoring required in Phase II of the IFN framework. MCFN noted that Phase II included completing IFN studies for Reaches 1, 2, and 3, with appropriate regulatory backstops.

12.1.4 Views of Canada

DFO stated that full utilization of Albian's current provincial licence allocation, as predicted for certain periods of the proposed project, would reduce Athabasca River flows by an average of 1.75 m^3 per second and would therefore contribute to reductions in available fish habitat. DFO noted that oil sands development had increased the demand for water withdrawals from the lower Athabasca River watershed, and potentially from its tributaries as well. DFO stated that greater municipal demand would also contribute to increased water withdrawals. DFO stated that reduced stream flow could impact spawning, rearing, feeding, migration, and overwintering habitats for fish. DFO noted that the most extreme low-flow conditions in the Athabasca River occurred in the winter, and therefore a fixed water demand would lead to a greater percentage diversion in the winter. DFO stated that the natural aquatic ecosystem could be dependent on seasonal and inter-annual variability in flow; therefore, reduced flow in any season could impact fish habitat productivity.

DFO indicated that it was currently working with AENV on developing a precautionary water management framework that incorporated the work of CEMA and the joint work of the regulators. DFO noted that the IFN Water Management Framework would be used for regulatory decision-making and for laying out procedures for management of oil sands water withdrawals from the lower Athabasca River. DFO stated that Phase I was a prescription for water use based on existing infrastructure, current understanding of aquatic ecosystem requirements, regulatory and legal constraints, and water demand. DFO noted that there were many uncertainties and data gaps with respect to the science on which the IFN Water Management Framework was based, and the First Nation's concerns were therefore legitimate. DFO stated that to address the stakeholders' concerns, the framework provided a process as part of Phase II to fill in those gaps. DFO stated that Phase II was a multistakeholder process for refining the understanding of the following framework components:

- habitat requirements,
- socioeconomic assessment,
- engineering/procedural requirements, and

- routine operation water requirements.

DFO noted that the IFN Water Management Framework tried to balance habitat loss by season so that no particular season would be overly impacted. DFO noted that current withdrawals were well below the Phase I thresholds and were not predicted to approach those thresholds until 2008. DFO indicated that compliance with the *Fisheries Act* was mandatory, irrespective of any provincial regulatory or permitting system.

DFO noted that Albian's current *Fisheries Act* authorization for the Athabasca freshwater intake facility stipulated a maximum instantaneous diversion rate of 4.17 m^3/s or 1.8 per cent of the average daily flow, whichever was lower. DFO stated that it was concerned that the predicted water needs of the MRM, Jackpine Mine, and MRME exceeded the withdrawal limit of the existing authorization under low-flow conditions. Therefore, DFO recommended that Albian

- provide an assessment of routine operation water requirements;
- participate in or, if necessary, facilitate the development of a regional multistakeholder group that would complete the assessment of habitat requirements for fish in the lower Athabasca River;
- provide a complete assessment of mitigation alternatives that minimized or eliminated impacts on fish and fish habitat resulting from water withdrawals; and
- participate in and support a socioeconomic assessment of social, recreational, and commercial values of the Athabasca River.

DFO stated that it envisioned four different working groups, possibly within CEMA, in which Albian would be a participant and which would complete the above recommendations as part of Phase II of the IFN Water Management Framework. DFO noted that the deadline for all four working groups would be July 1, 2009. DFO indicated that DFO's Phase I authorizations expired on December 31, 2010, and that by that time there should be enough information collected to make decisions on the framework. DFO noted that the framework timelines would require a substantial commitment from stakeholders and the government.

DFO committed to continue its participation in CEMA, which was continuing to work on determining and making recommendations to address impacts of water withdrawal on fish habitat in the lower Athabasca River watershed.

12.1.5 Views of Alberta

Alberta stated that while the proposed MRME project would not require water from the Athabasca River beyond Albian's existing *Water Act* allocation, it would result in an increased demand for water within that licence. Alberta noted that the 2003 CNRL Horizon and Shell Jackpine Mine applications contained recommendations that AENV, in cooperation with DFO, establish an IFN for the Athabasca River if CEMA were unable to do so by the end of 2005. Alberta noted that these recommendations were accepted by both government agencies. Alberta indicated that CEMA had completed most of the associated technical work but had not delivered a recommendation by the end of 2005. Alberta noted that in January 2006 AENV issued its draft water management system and in April 2006 DFO and AENV presented a joint two-phase IFN Water Management Framework to CEMA. Alberta noted that this was part of an ongoing dialogue with stakeholders on how to refine the January 2006 documents. In August 2006, AENV and DFO released their July 2006 draft to the stakeholders.

Alberta indicated that AENV and DFO were presently finalizing their joint IFN Water Management Framework for water use for the lower Athabasca River, which would include the reach of the river adjacent to the project. Alberta indicated that AENV and DFO fully expected to have a joint framework in place in time for any licences arising from this or from subsequent proceedings. Alberta stated that its position was that water use for the project, and for other future projects if approved, could take place with a high degree of environmental protection using the joint IFN Water Management Framework. Alberta stated that the IFN Water Management Framework was intended to provide a fair and reasonable balance between environmental protection and economic development.

Alberta acknowledged that the framework was still being finalized but felt that substantial changes to Phase I from the July 2006 draft would not be made. Alberta noted that it had incorporated stakeholder comments where appropriate. It stated that most of the changes to the framework over the course of its development had resulted in an increase in the level of protection provided. Alberta noted that the Phase II process would involve consultation and consideration of information to improve Phase I and could result in a more restrictive IFN. Alberta also stated that every effort would be made towards maintaining the timeline outlined in the framework, but should there be a delay, Phase I would be the backup. Alberta noted that some of the work related to Phase II had already begun. Alberta indicated that any new licenses issued would be subject to change in accordance with the IFN work under way.

Alberta noted that there was an allowance specifically made in the Muskeg River Mine licence to accommodate IFN restrictions once they were available. Alberta stated that there would be a review as to how Albian's licence might be adjusted. Alberta indicated that this adjustment would be subject to the industry group providing an IFN Water Management Framework implementation plan by the end of 2006. Therefore, within Phase I, the restrictions were such that current operations would not be significantly affected until 2008. However, the framework did put forth the expectation that there would be efforts on the part of the operators to minimize their use of water during lower flow periods. AENV noted that Section 33 of the *Water Act* presented opportunities for licensees to work out an agreement as to how to share available water during a time of restriction.

12.1.6 Views of the Joint Panel

The Joint Panel notes that Albian is not requesting to increase its water licence but that Albian will have a larger overall withdrawal from the system because of the water needs of this project.

The Joint Panel acknowledges the efforts that Albian has made to increase its overall water use efficiency. It notes that Albian is in the process of testing the filtration of water from gland water and would provide the results of such testing to regulators. The Joint Panel acknowledges that although reuse of this water would not decrease overall withdrawals, it could assist Albian in meeting the targets in the IFN Water Management Framework.

The Joint Panel acknowledges the effort that CEMA, AENV, and DFO made towards developing IFN recommendations for the lower Athabasca River by the end of 2005. The Joint Panel believes that the pending AENV/DFO framework could represent significant progress in addressing cumulative environmental effects in the region, although overall project average daily water use within the total project area will increase.

The Joint Panel notes that industry is to submit an IFN Water Management Framework implementation plan to AENV and DFO by the end of 2006. The Joint Panel expects industry operators to work together to meet the objectives in the pending framework and make efforts to reduce their overall water demand. The Joint Panel believes that Albian and other operators must work with AENV and DFO on developing integrated water management practices that would assist all operators in collectively meeting the targets in the finalized joint AENV/DFO IFN Water Management Framework. The Joint Panel expects Albian to participate in and provide funding for the work required to complete the second phase of the framework.

The Joint Panel recognizes that changes have been made to the framework over the course of its development. The Joint Panel notes DFO's and AENV's evidence that those changes were made in an attempt to strike a balance between protecting the aquatic ecosystem of the river and industry's water demands based on current knowledge. The Joint Panel notes that the approach taken is based on what AENV and DFO thought was both achievable and precautionary. The Joint Panel acknowledges that there are uncertainty and significant information gaps associated with the framework, but notes that the intent of the Phase II process is to address those gaps and uncertainties. The Joint Panel acknowledges that the amount of uncertainty and the timelines set out in Phase II will require significant commitment on the part of stakeholders. The Joint Panel believes that continued participation of all stakeholders is important and believes that AENV, DFO, industry, and all other stakeholders must work together towards maintaining the timelines set out in the framework. The Joint Panel also notes that depending on the results from Phase II, it could be difficult for current operators to accommodate a more restrictive IFN. The Joint Panel thus recommends that AENV consider options within any licences resulting from this or subsequent project applications that would allow for accommodation of changes that may result to the IFN Water Management Framework based on work completed through Phase II.

The Joint Panel notes that although AENV and DFO have not yet released a finalized backstop IFN Water Management Framework, AENV indicated that a finalized framework would be released prior to licences being required for this project or as a result of subsequent applications. The Joint Panel believes that this is essential.

The Joint Panel concludes that because Albian is not requesting additional water allocations, and having due regard for the implementation of the pending joint AENV/DFO IFN Water Management Framework, significant adverse environmental effects associated with water withdrawn from the Athabasca River for use in the project are unlikely.

12.2 Watershed Management Plan for the Muskeg River Basin

12.2.1 Views of Albian

Albian committed to being on the CEMA WITG while the management plan was being completed and beyond. Albian noted that it was the goal of the WITG to get a watershed management plan for the Muskeg River basin in place by the end of 2007, which it stated was an adequate timeframe given that Albian's operations for this project would not begin until 2009.

Albian noted that development in the Muskeg River basin was phased over time and that the MRME project represented only 4 per cent of the entire basin. Albian stated that the basin could support the development currently in place, in addition to the development predicted to come, if the mitigations outlined in its EIA were put in place. Albian indicated that the watershed management plan being developed by CEMA would likely incorporate the mitigation methods Albian discussed in its EIA. Albian indicated that it had designed its project to be protective of the Muskeg River basin by

- minimizing its terrestrial footprints through the phasing of its reclamation,
- minimizing its air and water emissions to maintain the water quality in the river, and
- working with adjacent operators to ensure that plans for the basin were integrated.

Albian stated that this was reflected in its EIA, which had concluded that there would be no long-term significant impacts on the basin. Albian stated that it believed that it had built everything into this project that would be necessary for Albian to do its part to sustain the basin. Albian stated that because it and other operators in the basin were working to maintain the integrity of the basin, it was less concerned about the management plan not being in place by the original deadline of 2005. Albian stated that it viewed the basin as a priority area because of the amount of development occurring there, but that it also believed its operations in the basin were being managed very well.

Albian stated that one option for water management systems was to include other regulatory backstops that would ensure that high-priority systems would be completed according to a set schedule.

12.2.2 Views of MCFN

MCFN stated that the Mineable Oil Sands Strategy (MOSS) and the new OSCI had stalled the delivery of the Muskeg River Watershed Management Plan until 2007. MCFN stated that in order to progress, the WITG required clear confirmation from government that its work on the plan would not be inhibited by future regulatory decisions about further land use in the oil sands region. MCFN recommended that government apply a water management plan backstop if the CEMA and WITG work were not completed by the new proposed deadline.

12.2.3 Views of Canada

Canada noted that there were presently several existing and planned oil sands developments operating within the Muskeg River basin, which over time were estimated to disturb between 50 and 60 per cent of the basin.

Canada indicated that one of the reasons a watershed management plan for the Muskeg River basin had yet to be developed was uncertainty about future plans for the basin. Canada stated that the WITG would have a better understanding of the task once there was a better understanding of the parameters and plans for the basin. Canada acknowledged that another reason for the delay was the lack of active or consistent participation by some of the task group members. Canada stated that it was very supportive of developing a watershed management plan for the Muskeg River basin. Canada stated that watershed management planning was useful for decision-making and for ensuring the input of all stakeholders. Canada stated that CEMA was still an appropriate mechanism for developing a watershed management plan for the Muskeg River basin.

12.2.4 Views of Alberta

Alberta noted that the Reclamation Working Group and the WITG were currently developing management frameworks that would influence activities in the Muskeg River basin. Alberta also noted that the integration of proposed landforms and drainage within mine lease areas and across lease boundaries had been raised at both groups. Alberta noted that the WITG had been unable to provide an indication of primary management goals and might not be able to provide appropriate recommendations prior to when mine planning for the MRME project was required. Alberta stated its position that until an integrated water management framework for the Muskeg River basin was in place, Alberta would consider other options for implementing comprehensive criteria that would influence development in the Muskeg River basin. Alberta cited the CEMA draft water quality objectives for the Athabasca River, expected in 2007, and the CEMA Muskeg River Investigations Level Initiatives as examples. Alberta stated that the water quality objectives would be considered when determining thresholds for water quality and quantity in the Muskeg River. Alberta stated that any *EPEA* approval that might be issued for the project could require Albian to participate in industry-regulatory meetings to frame integrated water management options for the Muskeg River basin. AENV acknowledged that among the issues the WITG faced were inconsistent member participation and a lack of understanding about how a watershed management plan fit in with other plans for the basin.

AENV stated that it was currently considering options internally on what could be the best path forward for the Muskeg River basin. AENV indicated that it intended to present those to the WITG. AENV said that discussions were still occurring and so it could not elaborate further. AENV stated that it would use the WITG as a vehicle to initiate any discussions.

12.2.5 Views of the Joint Panel

The Joint Panel notes that one of the recommendations made in the joint 2003 Shell Jackpine Mine decision (Decision 2004-009) report was for CEMA to develop a watershed management plan by the end of 2005; the report further stated that if CEMA failed to do so, AENV should consider backstopping the process. The Joint Panel notes that a watershed management plan was considered a priority issue at that time, and it is concerned about the lack of progress on this issue. The Joint Panel notes that CEMA has not delivered a watershed management plan and AENV has not issued a backstop.

The Joint Panel acknowledges that several factors contributed to CEMA's inability to deliver a watershed management framework by the end of 2005. The Joint Panel is of the opinion that the WITG requires strong government direction and clearly defined objectives. The Joint Panel notes that development of a watershed management plan for the Muskeg River basin will require significant commitment on the part of its stakeholders. The Joint Panel recommends that all members of the WITG commit to participating actively and consistently in the group. The Joint Panel recommends that AENV and DFO assign members with the appropriate science and technical background to assist in moving the CEMA WITG's work plan forward.

The Joint Panel acknowledges Albian's effort in considering the sustainability of the Muskeg River basin in the design of its projects. The Joint Panel notes that all parties stated that there was still value in the development of a watershed management plan for the Muskeg River basin. Given the level of development and the increasing emphasis on coordinated development, the Joint Panel believes that a watershed management plan is still a priority issue. The Joint Panel believes that the accountability to develop a watershed management plan for the Muskeg River basin ultimately lies with government. The Joint Panel notes that CEMA proposes to deliver a watershed management plan by the end of 2007 and is concerned about the two-year delay on this issue. The Joint Panel notes that AENV is currently considering options internally for moving the work plan forward. The Joint Panel is supportive of AENV considering interim measures until a watershed management plan for the Muskeg River basin is completed and it encourages AENV to provide direction to the task group by presenting its recommendations at the group's next meeting or as soon as possible thereafter. In addition, the Joint Panel recommends that AENV enforce the 2007 timeline for CEMA to deliver a watershed management plan for the Muskeg River through the use of a regulatory backstop or applicant responsibility. The Joint Panel supports AENV's suggested *EPEA* approval condition to require Albian's participation in industry-regulator meetings to frame integrated water management options for the Muskeg River basin.

The Joint Panel finds that with the appropriate mitigation measures implemented by the operators currently present in the Muskeg River basin and with the implementation of a watershed management plan by the end of 2007, development could proceed in the basin without causing significant adverse environmental effects on the Muskeg River basin.

12.3 CEMA

12.3.1 Views of Albian

Albian stated that current regional environmental and socioeconomic multistakeholder initiatives were effective and appropriate tools for managing cumulative effects and that it was committed to CEMA. Albian noted that no one appeared to dispute that CEMA was an appropriate means for managing cumulative environmental issues and agreed that the discipline of timelines would be helpful. Albian stated that the members of CEMA were the parties that needed to work on the timelines. Albian noted that the comprehensive CEMA program had a five-year budget of $22 million and had produced 100 reports since its inception, which had assisted AENV in forming opinions and making decisions. Albian was of the view that CEMA was working and was backstopped by the regulators. Albian noted that because CEMA was consensus based, its work required time. Albian stated that it would continue active participation in CEMA and in all CEMA working groups.

12.3.2 Views of ACFN, FMFN, and OSEC

ACFN, Fort McKay, and OSEC said that they were concerned about oil sands mining cumulative effects and the lack of progress on managing the effects. They noted that since the 1999 RSDS identified the issues and the work of CEMA commenced in 2000, only the following three management frameworks had been completed:

- Trace Heavy Metals Framework, in 2002,
- Acid Deposition Management Framework, in 2004, and

- Ozone Management Framework, in 2006.

ACFN, FMFN, and OSEC stated that few of the urgent RSDS issues identified in 1999 had been addressed in management frameworks and further noted that important policies and management frameworks, including the RSDS and the IRP, were outdated. They stated that Alberta needed to get in front of development in the region with relevant policies and regulatory controls. This should include setting timelines and outcome definitions in an updated RSDS, as well as establishing means to track progress and to step in when progress was inadequate. ACFN, FMFN, and OSEC observed that the lack of progress on policy and planning frameworks to manage conflicting land use and protection issues placed the EUB in a policy vacuum for making project-specific decisions.

12.3.3 Views of MCFN

MCFN said that it was concerned about

- the slow progress of CEMA deliverables,
- lack of clarity about how Alberta made decisions on implementation and enforcement of CEMA recommendations, and
- the perception of some parties that CEMA participation fulfilled First Nations' consultation requirements.

MCFN noted that since 2000, CEMA had produced six recommendations and, despite CEMA's efforts, had not kept pace with the rate of development in the region. It noted that relatively few of the approved and planned mine and in situ projects had started operations, but many would come on line in the near future. It said that six CEMA technical working groups and more than 30 task groups were addressing complex issues, some of which had never been addressed elsewhere. It acknowledged that CEMA was building a strong scientific understanding through research and fieldwork that required significant time and resources. MCFN said that this complexity and time to build understanding was coupled with the difficulty of soliciting and retaining participants and maintaining continuity of member representatives, as well as scarcity of expertise to carry out CEMA studies. It said that these factors all contributed to the slow progress of CEMA, which could render recommendations obsolete, given the pace and scale of development. It said that regulators should have appropriate backstops in place and should set aggressive CEMA timelines. It recommended that

- Lower Athabasca River water quality objectives be delivered by the end of 2007,
- a Muskeg River watershed integrity plan be delivered by the end of 2007,
- a trace air contaminants management framework be delivered by the end of 2007,
- wetland development guidelines be delivered by the end of 2007,
- end pit lakes guidelines be delivered by the end of 2008,
- IFN for Athabasca River Reaches 1, 2, and 3 be delivered by the end of 2008, and
- a terrestrial resource management system be delivered by the end of 2008.

MCFN asked the Joint Panel to recommend that Alberta

- re-evaluate the RSDS to ensure that existing issues had been addressed and emerging issues were being identified and prioritized,
- undertake an assessment of CEMA's process for achieving the RSDS,
- publicly report on the application and effectiveness of CEMA recommendations approved by government, and
- commit CEMA to delivering specific recommendations in a defined time frame subject to a regulatory backstop.

12.3.4 Views of Canada

Canada stated that it continued to believe that cumulative effects were an important environmental issue facing the oil sands region and that development of environmental frameworks to adaptively manage cumulative effects would require ongoing cooperation between all stakeholders in the region due to the integrated nature of these issues.

Canada made a number of recommendations with respect to cumulative environmental effects issues. EC requested that the Joint Panel recommend that AENV update the RSDS and the RSDS Technical Support document or develop an equivalent strategy to address regional cumulative effects. EC further requested the Joint Panel to recommend that AENV, in cooperation with all regional stakeholders, renew its commitment to delivering solutions on issues raised in the RSDS, including defining timelines.

Because environmental management frameworks meeting the full intent of the RSDS were not yet completely developed, EC requested that the Joint Panel recommend

- defined timelines to AENV for the development and implementation of environmental management frameworks to meet the intent of the RSDS, and
- to CEMA that it consider these timelines in the planning and execution of its work plan to develop environmental management frameworks.

EC requested that the Joint Panel recommend

- that Alberta lead the development and implementation of an integrated environmental monitoring approach to support the ongoing adaptive management of human activities in the Athabasca Oil Sands Region,
- timelines to Alberta for the development and implementation of a regional ecosystem monitoring approach, and
- that Alberta lead the development and incorporation of biodiversity monitoring into an integrated environmental monitoring approach.

12.3.5 Views of Alberta

Alberta noted that CEMA had produced over 75 technical reports and environmental management frameworks for trace metals, acid deposition, and ground-level ozone, as well as management tools for improving reclamation and reducing impacts on terrestrial resources. It said that responsibility for outcomes of the CEMA process fell to Alberta regulators and that CEMA was a tool to provide advice and assistance.

Alberta said that there had been significant progress in addressing cumulative environmental effects on air quality, terrestrial resources, reclamation, and surface water in the region. It stated that it supported CEMA and recognized that multistakeholder consensus processes required adequate time for scientific studies to be completed, interpreted, and understood, as well as sufficient time for stakeholders to form a consensus on final recommendations. It noted that the time taken by the process to develop recommendations often saved time during implementation.

However, Alberta also acknowledged and responded to the discussion on the need for appropriate deadlines for CEMA's work. It stated that AENV had committed to initiating discussions with CEMA to establish appropriate deadlines. It said that the urgency of a particular item, the degree of protection afforded by existing requirements, and the ability of CEMA to make better progress than if regulators took over were all factors that would be considered in deciding whether to impose a regulatory backstop or to extend deadlines in order to allow CEMA to complete its work. Alberta stated that a blanket policy of imposing regulatory backstops when CEMA failed to meet a timeline might not necessarily be the appropriate response.

12.3.6 Views of the Joint Panel

The Joint Panel acknowledges that the complex issues the RSDS attempted to define and that CEMA is attempting to address require building a body of knowledge and understanding unique in the world. The potential of CEMA to define, fund, and accomplish the necessary scientific and technical studies and research exceeds the capability of any one of its member groups. The Joint Panel believes that CEMA's opportunity to create sound environmental management recommendations founded on good knowledge that is supported and based on consensus is a superior approach to a regulator imposing solutions on the region. The Joint Panel is still of the view that cumulative environmental management frameworks present a more effective approach to development than project-by-project application and decision-making regulatory processes. The Joint Panel observes, however, that oil sands development is proceeding, not waiting for the environmental management frameworks that CEMA is charged with developing.

It is the Joint Panel's view that CEMA has the potential to be much more effective in developing regional environmental protection and sustainable development recommendations. The Joint Panel believes that the ultimate responsibility for regulating the cumulative effects from oil sands development lies with government. The Joint Panel therefore recommends that all government agencies place a greater priority on their roles within CEMA. The Joint Panel recommends that all CEMA stakeholders take steps to prioritize their effective participation in, contributions to, and leadership of CEMA and its working groups.

The Joint Panel recommends that all participants in regional initiatives, including CEMA, assist in setting reasonable goals, timelines, sequencing, and priorities. The Joint Panel recommends that Alberta encourage CEMA members to outline their expectations and required resource allocation for such initiatives to determine whether their goals and timelines are achievable. If fully researched recommendations cannot be delivered within target timelines, CEMA groups need to make interim recommendations on appropriate environmentally precautionary measures that can be used until recommendations from CEMA are completed. Failing that, the Joint Panel recommends that Alberta implement an interim policy, framework, or regulatory control as appropriate.

The Joint Panel recognizes that Alberta has initiated the use of regulatory controls on environmental matters where CEMA recommendations have not addressed the issues. The Joint Panel also recognizes that Alberta has identified steps that if implemented could significantly improve areas of known weaknesses in the management of landscape design and reclamation materials through potential *EPEA* approval conditions. The Joint Panel further recognizes that Alberta has taken steps that if implemented may significantly improve air emission management through improved BATEA criteria. The Joint Panel supports the approach that AENV and DFO have taken with the IFN Water Management Framework. The Joint Panel believes that government agencies and industry need to work together on water management strategies for the region.

13 REGIONAL DEVELOPMENT

13.1 Closure of Canterra Road

13.1.1 Views of Albian

Albian proposed to close the Canterra Road in 2009 as mining proceeded in the Jackpine Mine area. Albian said that it had had discussions with Syncrude regarding a mine access road to Aurora South, along the east–west boundary between Leases 13 and 30. The road would start at the existing MRM access road near the existing services camp and end at the proposed Aurora South plant site. Albian believed that enough room existed between the Lease 90 pit and the Lease 90 North Pit for road and utility access to Aurora South.

Albian was of the view that this matter was considered at the Jackpine Mine hearing and dealt with in EUB *Decision 2004-009*. Albian argued that the EUB had approved the relocation of the Canterra Road at that time.

Albian stated that since the time of the Jackpine Mine hearing, it had been spending money and working on a cooperative solution to find an alternative to the Canterra Road. Albian said that it was on the East Side Corridor Committee and had been participating in studies and assessments aimed at finding a solution. Albian agreed with Alberta that the best solution was a cooperative one and believed that this would be resolved with the various stakeholders.

13.1.2 Views of Alberta

Alberta stated that the Canterra Road was a major industrial access corridor that provided access to Suncor Firebag, Husky Sunrise, the proposed Imperial Oil Kearl Oil Sands Project, and the proposed Synenco Northern Lights Project. In addition, Alberta stated that the Canterra Road provided access to Registered Fur Management Areas. Alberta noted that Albian proposed to close the Canterra Road in 2009 as mining proceeded in the Jackpine Mine area. Alberta also noted that Albian proposed to relocate portions of the road to the south and east of its planned Sharkbite Pit and overburden storage areas between 2020 and 2026. Alberta believed that the dispositions for the Canterra Road were split by sections along the route and held individually by Imperial Oil Resources, Albian Canada Limited, Suncor Energy, and Husky Oil Ltd. Alberta stated that the East Side Corridor Committee, consisting of representatives from Alberta, the RMWB, and industry, was reviewing alternative road alignments to replace the Canterra Road. Alberta believed that when the location for the new bridge across the Athabasca River was decided, it would require approval by the appropriate provincial and/or federal government departments prior to bridge construction and road design consideration. This process would define the time frame before construction began. Alberta encouraged the accelerated planning, approval, and construction of an alternative access road to replace the Canterra Road through the East Side Corridor Committee. Alberta said that the location of this road would likely be outside the Albian area. Alberta stated that in the event that alternative access was not in place by 2009, Alberta would maintain access to eastern areas and might limit or delay the issue of dispositions to Albian for mine development, which could affect the use of the existing Canterra Road.

13.1.3 Views of the Joint Panel

The Joint Panel finds that the decision to relocate the Canterra Road was made as a result of the Jackpine Mine hearing and that the process to accomplish this relocation is well under way. The Joint Panel sees no reason to change or vary this decision.

The Joint Panel recognizes that the selected new route intended to replace the function of this road may be one of the eastside access corridor alternatives proposed by RIWG. The eastside corridor will be important to the municipal, provincial, and federal governments, as well as other resource development operators who require continued access to their project areas. The Joint Panel is not convinced that the location proposed within the application is the most appropriate alternative. Therefore, the Joint Panel recommends to Alberta that SRD and AIT assess and implement location planning for the most appropriate location for an eastside access corridor. The corridor location should be based on a constraints assessment to achieve integrated land management (ILM) objectives. The Joint Panel believes that the ILM objectives should address regional resource development requirements and an effective approach to address Highway 63 traffic issues, municipal considerations, and cumulative environmental effects. Furthermore, the Joint Panel recommends that SRD and AIT provide the EUB with an update when they have concluded what is the most appropriate location for the eastside access corridor location. The Joint Panel expects Albian to cooperate with SRD on closure and relocation of the Canterra Road consistent with the ILM objectives.

14 TRADITIONAL LAND USE AND TRADITIONAL ENVIRONMENTAL/ ECOLOGICAL KNOWLEDGE

14.1 Views of Albian

Albian stated that it had conducted extensive traditional land use (TLU) and traditional environmental/ecological knowledge (TEK) study work over the last 10 years with the goal of accurately judging the impacts of its operations on traditional pursuits. In turn, Albian indicated that it used this information to take steps to ensure that traditional pursuits could be practised following project completion and reclamation. Albian indicated that it had committed to ensure that First Nations and aboriginal groups were involved and had input into all aspects of Albian's reclamation plans, including the selection of traditional plants, the landforms, and how Albian reclaimed them. It stated that both TEK and input from the First Nations' scientific consultants were also incorporated into Albian's monitoring programs.

Albian indicated that it first established a relationship with FMFN, as it was the most directly impacted by Albian's operations. Albian indicated that it was now working with several First

Nations and aboriginal groups that had indicated an interest in ensuring that their traditional activities were also incorporated into project planning, monitoring, and reclamation plans. Albian submitted that it had worked extremely hard to get agreements with the ACFN, MCFN, the Métis Local, the WBFNES, and the Clearwater Band.

14.2 Views of MCFN

The MCFN submitted that it used its traditional lands to hunt, trap, fish, and pursue other traditional ways of life. It also indicated that almost half of the MCFN traditional territory was on lands that are the subject of oil sands leases. As a result, it was directly and adversely affected by the MRME project and by oil sands development in general. The MCFN acknowledged that the issues it raised were regional in nature. It outlined its concern that the intensity and magnitude of development were drastically changing its traditional land. The MCFN stated that it sought certainty that its traditional lands would be protected for future use.

14.3 Views of the Joint Panel

The Joint Panel concludes that given Albian's commitments to work with First Nations, the Métis Local, and other aboriginal groups in the area and to take steps to address their concerns, it is unlikely that future traditional land use will be significantly affected as a result of the MRME project.

15 HISTORICAL RESOURCES

15.1 Quarry of the Ancestors

15.1.1 Views of Albian

Albian stated that it had conducted a Historical Resources Impact Assessment (HRIA) in order to ensure that all areas proposed for development as part of the MRME's 10-year development footprint were adequately assessed. Albian stated that historical resources studies were also undertaken for the proposed "Quarry of the Ancestors." A number of known sites were revisited and the area tested to determine the significance of these sites. In addition, four new sites were identified and recorded, and Albian stated that reporting was in progress for all of the sites considered.

Albian stated that the plan for the Quarry of the Ancestors was being developed by Alberta Community Development (ACD). ACD had revised the original boundary for the site and was consulting with various stakeholders on the change. Albian believed that ACD's consultation with stakeholders included the Government of Canada, Birch Mountain Resources Ltd. (Birch Mountain), and representatives of other industries that had linear corridors in the area.

Albian stated that it was not opposed to the proposed designation, nor was it aware of any other party being opposed to it. Albian indicated that the proposed designation raised three potential impacts on its mine development:

- the overburden disposal area nearest to the Quarry of the Ancestors would be reduced in size by 40 ha,

- the Canterra Road leading to the Jackpine Mine site would be relocated, and
- about 683 thousand m^3 of bitumen ore in the northern portion of the Lease 90 south pit would potentially be sterilized.

15.1.2 Views of Alberta

Alberta stated that it evaluated several significant archaeological sites in an ancient quarry complex within and east of Birch Mountain's lands since fall 2003. These sites were collectively named the Quarry of the Ancestors by Birch Mountain Resources. Alberta stated that at the heart of the Quarry of the Ancestors was an outcropping of distinctive, high-quality, silicified sandstone that had been quarried in ancient times for use in stone tool-making.

Alberta indicated that the cultural value of these archaeological sites, both to Alberta and beyond its borders, was as a cohesive complex of sites that had a significance that was greater than that of the sum of the individual sites. Alberta stated that typically archaeological sites in the path of development could be excavated to salvage information. However, Alberta believed in this case that current methods of excavation and analysis would not be sufficiently refined to allow for archaeological salvage that would be as valuable as preserving the complex. Alberta believed that this was particularly true for the habitation and workshop sites on the periphery of the complex, many of which appeared to be intricate in structure and content.

Alberta stated that the actual quarry area of the archaeological site complex contained negligible mineable bitumen deposits and that those present would be sterilized by permanent historical resource conservation. Alberta Energy estimated that 683 thousand m^3 to 1.27 million m^3 of in situ bitumen would be sterilized within an area of about 230 ha.

Alberta believed that due to the extraordinary significance of this complex of archaeological sites to the understanding of the earliest human presence in Alberta, the Quarry of the Ancestors should be designated as a Provincial Historical Resource under the *Historical Resources Act*. In preparation for this, ACD applied for and received a temporary Protective Notation on the Quarry of the Ancestors area. Alberta stated that discussions regarding the proposed designation area were ongoing with mineral leaseholders, including Birch Mountain and Albian, and with other disposition holders, First Nations, and government agencies. Alberta stated that all of these parties were in agreement with the proposed designation and that an application for a revised Protective Notation for the Quarry of the Ancestors was expected soon.

15.1.3 Views of the Joint Panel

The Joint Panel believes that the proposed designation of the Quarry of the Ancestors is reasonable. The Joint Panel understands that work on the proposed designation is ongoing and that ACD is currently engaged in a consultation process with stakeholders. The Joint Panel notes that the boundary of the Quarry of the Ancestors is still being determined and may be revised from that indicated by ACD in this proceeding..

The Joint Panel understands that the designation plan will be reviewed by a number of agencies, including SRD and the EUB, which will assess the resource sterilization that may result from the designation of the Quarry of the Ancestors as a Provincial Historical Resource. The Joint Panel notes that no stakeholder is opposed to the designation. The Joint Panel recognizes that the

Quarry of the Ancestors designation as a Provincial Historical Resource would impact Albian's mine plan, schedules, and pit limits, and would sterilize ore particularly in the area of the Lease 90 south pit and the waste dump.

The Joint Panel accepts Alberta's view that on the basis of the available historical data and due to the extraordinary significance of this complex of archaeological sites, the Quarry of the Ancestors should be set aside as an historical resource of significant value. The Joint Panel directs Albian to submit to the EUB an update on the impacts the finalized designation boundary that the Quarry of the Ancestors will have on its mine plan, schedule, processing scheme, and tailings plan. This update is to be provided as part of Albian's annual mine plan and to be submitted not later than one calendar year following the date the Quarry of the Ancestors is designated as a Provincial Heritage Resource.

The Joint Panel concludes that the MRME project is not likely to have significant adverse effects on cultural and heritage resources, provided that the mitigation measures proposed by Albian and approved by Alberta are implemented.

16 HUMAN HEALTH

16.1 Views of Albian

Albian said that the human health component of the EIA presented an assessment of the potential effects of chemical emissions on the health of people living in the vicinity of the MRME project. In its EIA, Albian reported that "The results of the human health risk assessment for the application case indicated that the magnitude of acute and chronic effects to human health are negligible for all but one of the parameters (acrolein)."

In the EIA, acrolein was identified as being of potentially low magnitude at Fort McMurray, Fort McKay, and the hunter/trapper cabins for both the Base Case and the Application Case. Albian stated that "In addition to conservative air quality modelling for acrolein, conservative toxicity reference values were used in the health risk assessment." The report also noted that ambient air quality monitoring had not been completed in the oil sands region for acrolein. Albian said that it would continue participating in CEMA's Trace Metal and Air Contaminate Working Group health risk studies.

In relation to any follow-up monitoring studies for the project, including levels of contaminants of potential concern in country foods, Albian stated that it would be willing to participate in a regional follow-up study to the 1999 Country Foods Study conducted through RAMP for the Wood Buffalo Region and published in 2003. Albian stated, however, that it would not support a study that focused narrowly on the MRME project.

With respect to $PM_{2.5}$ and less severe health end points, Albian stated that it would require Health Canada to provide it with an updated guideline on PM risk assessment that listed the statistical relative risk associated with the daily change in the concentration of PM for a particular health end point, as well as the baseline health effect incident rate for that particular less severe health end point. This information for less severe health end points was currently lacking.

Albian stated that it supported AHW's initiative to measure arsenic levels in country foods "in an attempt to provide our neighbours with greater certainty."

Albian indicated that it supported the proposed Baseline Health Study for the residents of Fort Chipewyan, not because oil sands emissions were causing increased health risks, but "simply because this type of study was raised as a concern by our neighbours in the community of Fort Chipewyan."

16.2 Views of MCFN

MCFN stated that it was concerned about the intensity and magnitude of impacts that were drastically changing its traditional lands. MCFN was committed to seeking certainty that the water would be safe to drink and use and for the health of all the members of the MCFN.

MCFN indicated that it was concerned about PAHs and about the concentrations of heavy metals, such as selenium and mercury, in the EPLs and the possible human health implications of these.

MCFN stated that it required assurance that the fish introduced into EPLs would be safe for human consumption.

16.3 Views of Canada

Health Canada stated that it was the federal department responsible for helping the people of Canada maintain and improve their health. Health Canada's overarching goal was to ensure that the potential health impacts of this project were identified and mitigated to minimize risks to human health.

Health Canada indicated that its analysis and assessment of the potential effects of the project addressed air quality, water quality, noise, and country foods.

Health Canada concluded that its experts' review of the EIA for the proposed project did not raise concerns with respect to significant adverse health effects.

Health Canada made the following recommendations:

- With respect to $PM_{2.5}$, an analysis of less severe end points should be completed by Albian.
- Albian should uphold the Canada Wide Standard principle of keeping clean areas clean.
- Albian should present an additional assessment scenario for existing conditions without any approved future developments.
- Cabin D should be included in Albian's postconstruction noise assessment and that the assessment include impulsive noise contributions to the sound levels at this receptor.
- Follow-up monitoring studies monitoring the level of chemicals of concern in country foods should be undertaken by Albian and include measurement of mercury levels in the meat of fish species caught for consumption in the project area.

During the hearings, Health Canada provided Albian with some additional guidance in relation to $PM_{2.5}$ and less severe end points and agreed that Albian could address Health Canada's concerns in the future.

16.4 Views of Alberta

AHW stated that it led an interdepartmental human health review team that reviewed the EIA using a population health risk assessment process. The team reviewed the application to determine and understand the health issues connected with the development of the project.

AHW indicated that it viewed the conclusions presented in the EIA, with the exception of arsenic, as reasonable. AHW stated that it would continue to observe and evaluate the regional monitoring data to ensure that unacceptable health risks were avoided.

AHW pointed out that Albian evaluated the potential health risks associated with arsenic in the most recent round of clarification questions. It stated that the magnitude of the predicted arsenic risks for the background, project, and cumulative effects assessment cases was considerably smaller than that indicated in the Suncor Voyageur application. AHW added that its arsenic report findings were relevant to the project since arsenic would be released by it. Notwithstanding Albian's reduced magnitude of predicted arsenic risk, AHW was of the view that until the arsenic report findings were complete and in light of the magnitude of arsenic risk predicted in the Suncor Voyageur application, there was still too much uncertainty regarding the potential health impacts as a result of exposure to arsenic in subsistence foods in the Fort McMurray oil sands region.

AHW indicated that it would coordinate a new sampling program in which moose meat, deer meat, and cattail root samples would be gathered from the Fort McMurray area and from a reference location unaffected by oil sands development. The sampling results would then be used to assess whether there was in fact an arsenic-related health risk from the consumption of moose meat, deer meat, and cattail root. The final report was expected to be available in fall 2007, pending the availability of samples.

AHW stated that any additional increase in the predicted risk, no matter how small, would be unacceptable if the magnitude of predicted risk presented in the Suncor Voyageur application were confirmed. Consequently, should the Joint Panel find the project to be in the public interest, Alberta recommended that given the regional implications of this issue and the predicted contributions from the project, the Joint Panel consider the need to review Albian's approval in light of the report findings before Albian began project operations.

16.5 View of the Joint Panel

The Joint Panel accepts Alberta's view that the conclusions of the health risk assessment conducted by Albian are reasonable, with the exception of arsenic. The Joint Panel acknowledges the comments and concerns brought forward by a number of interveners regarding the health risk assessment. It also acknowledges and supports that AHW intends to follow up with an independent review of health risks from arsenic exposure.